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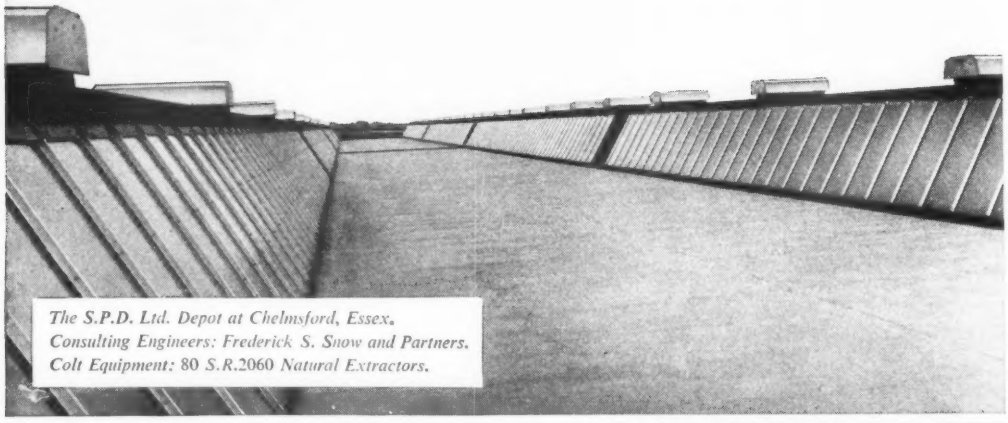

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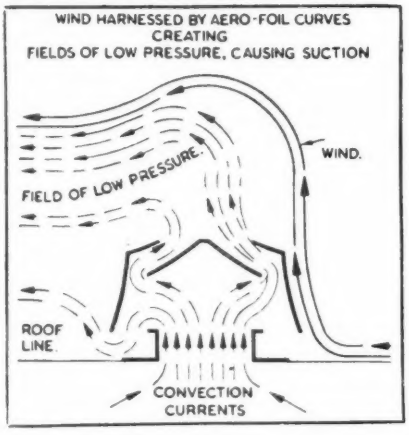

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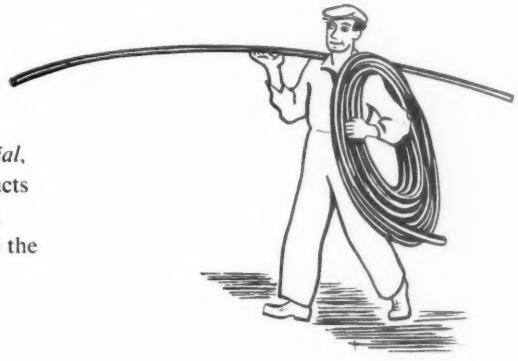

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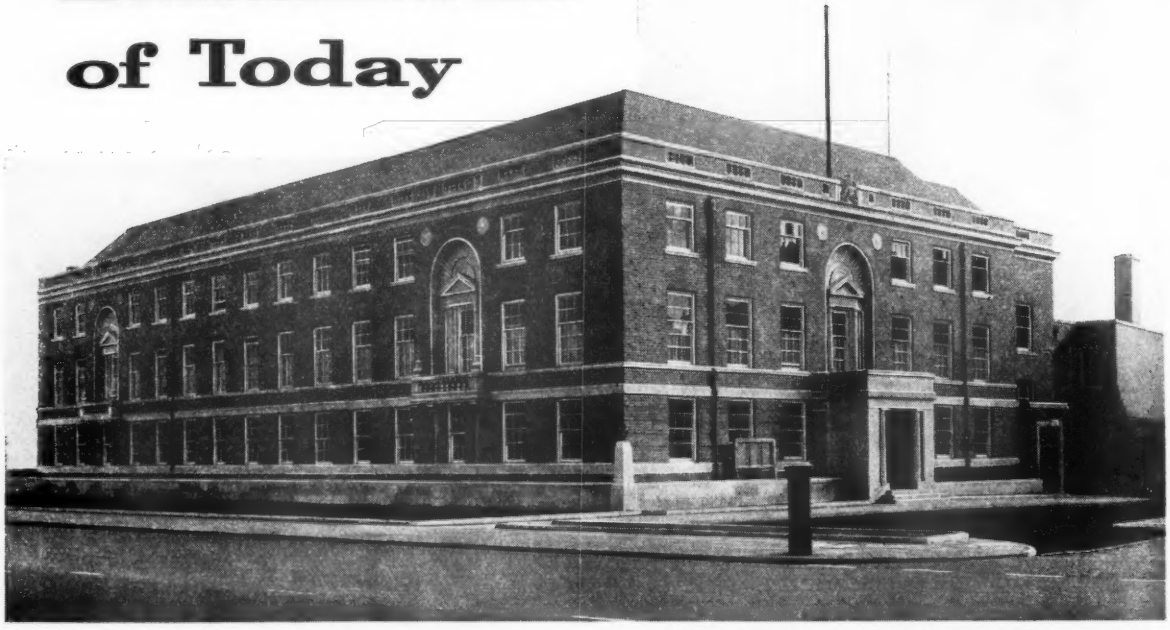

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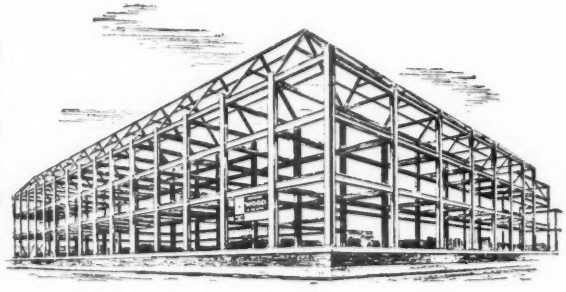

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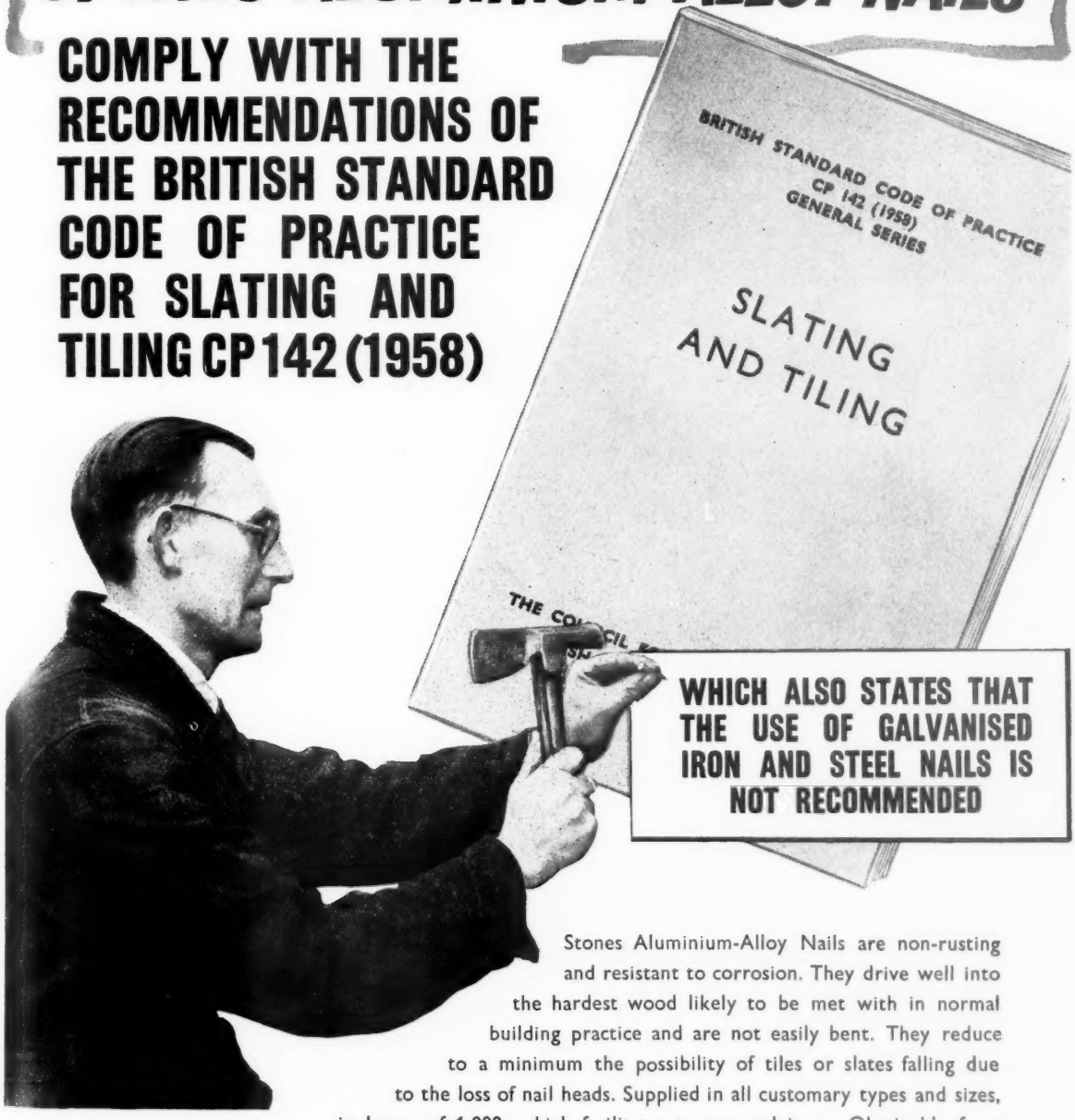

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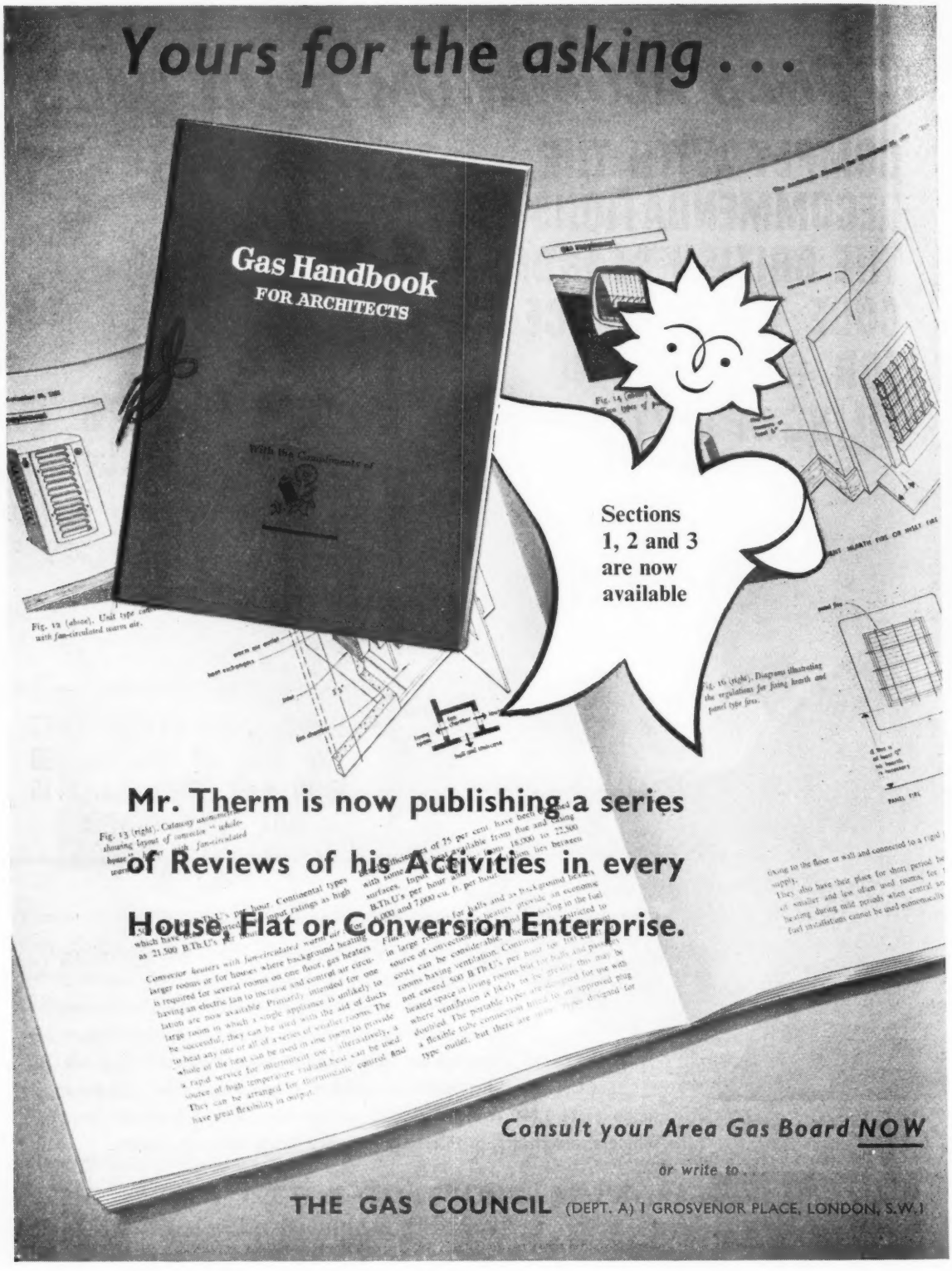

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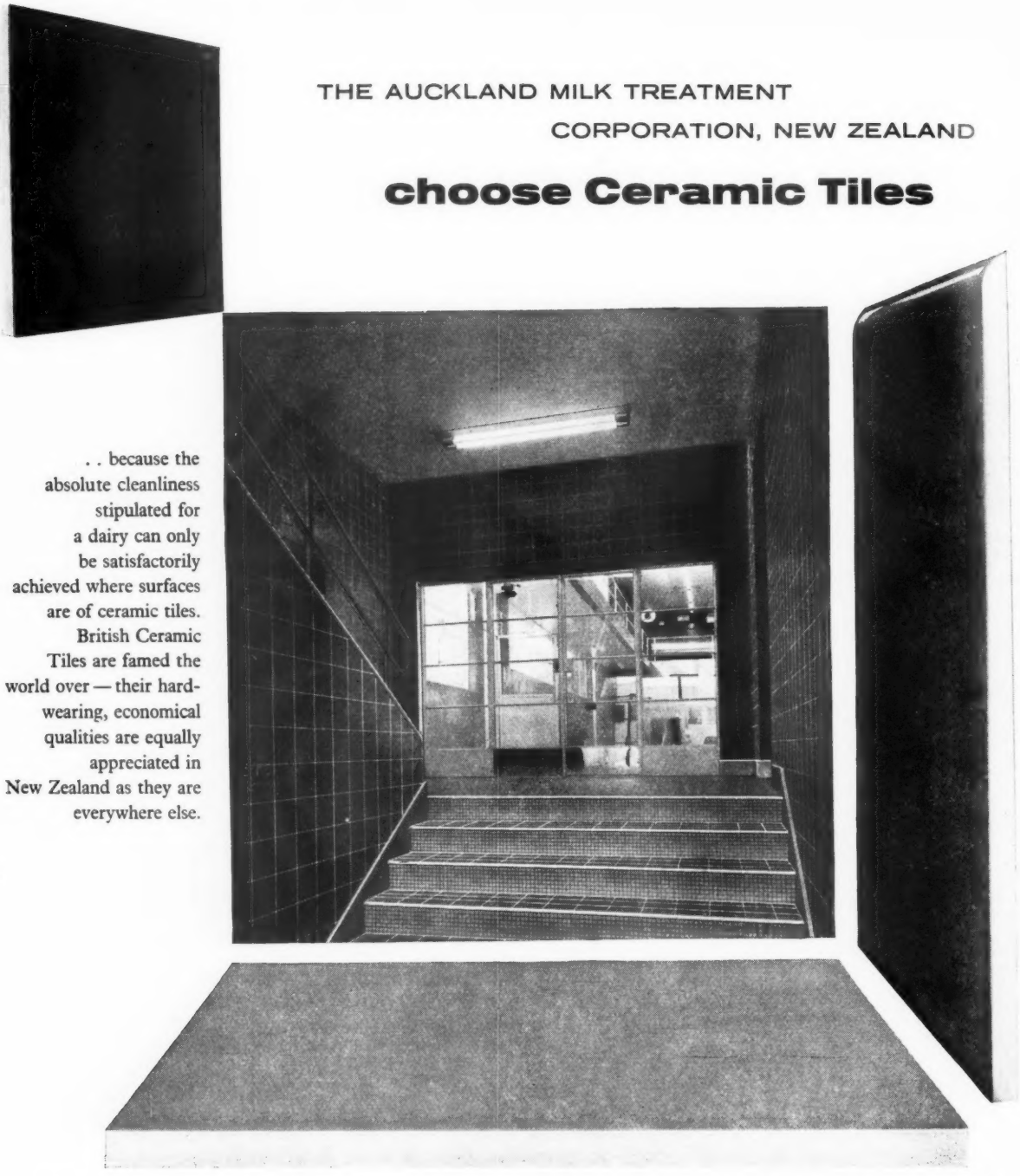

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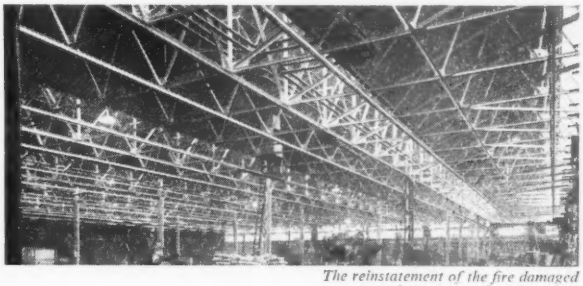

The reinstatement of the fire damaged area in progress of construction.

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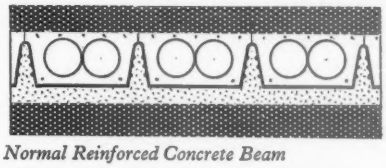
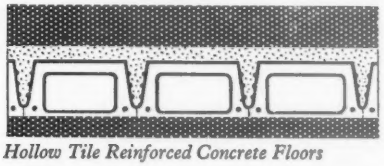


Normal Reinforced Concrete Beam



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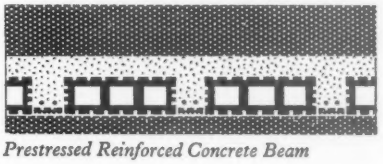

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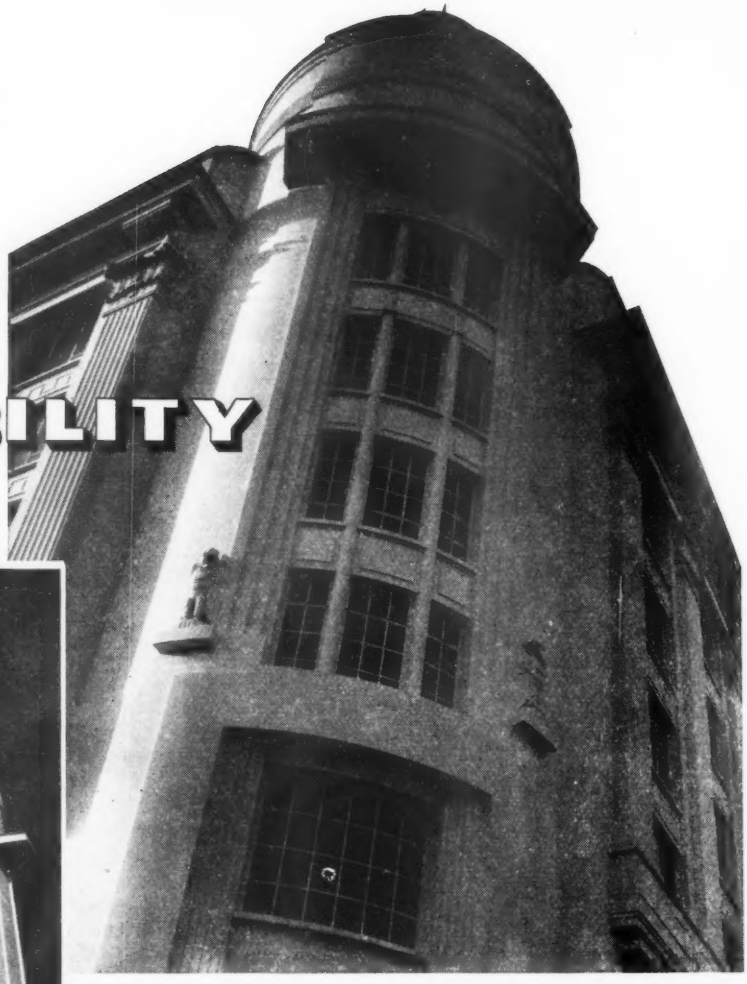

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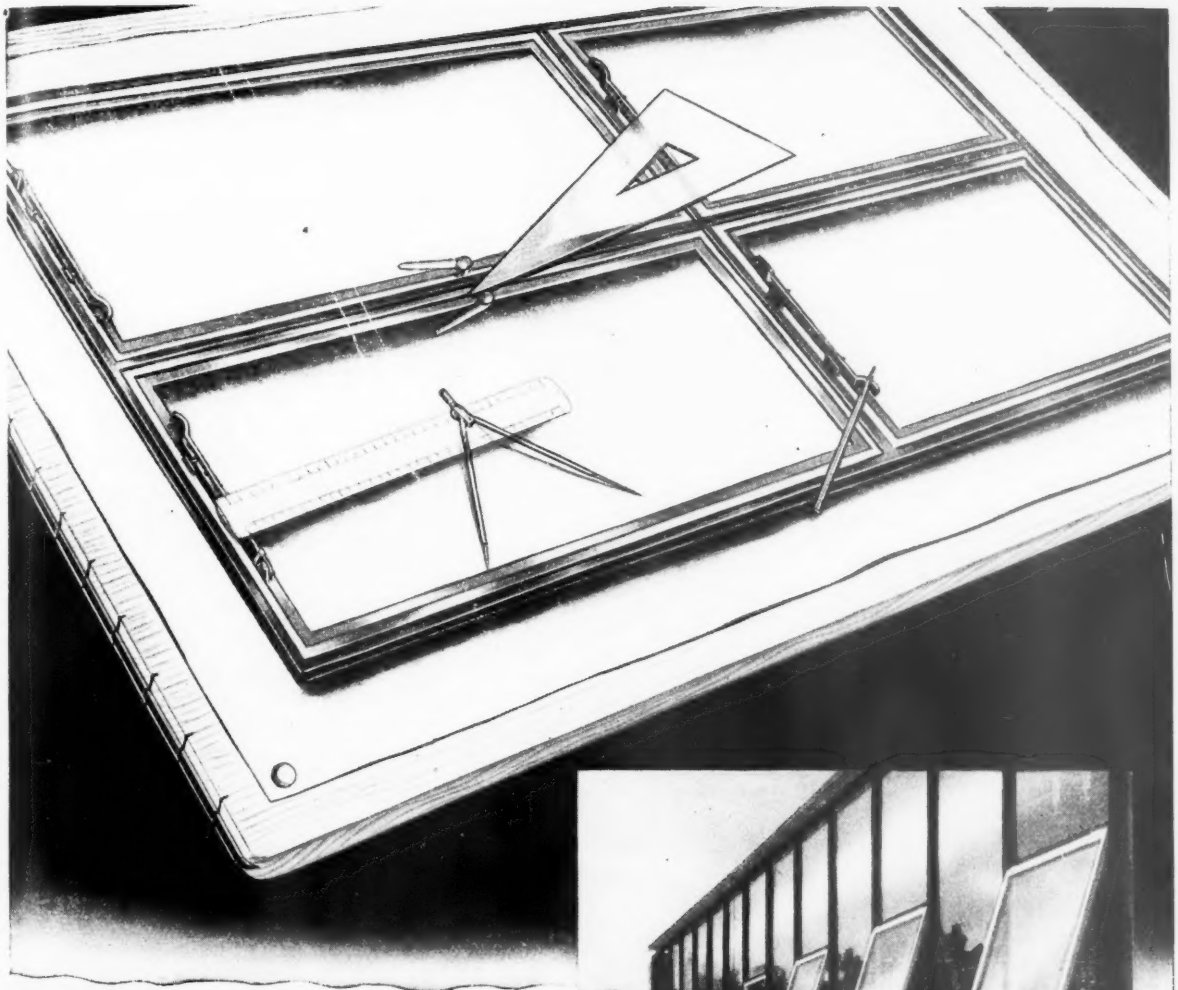

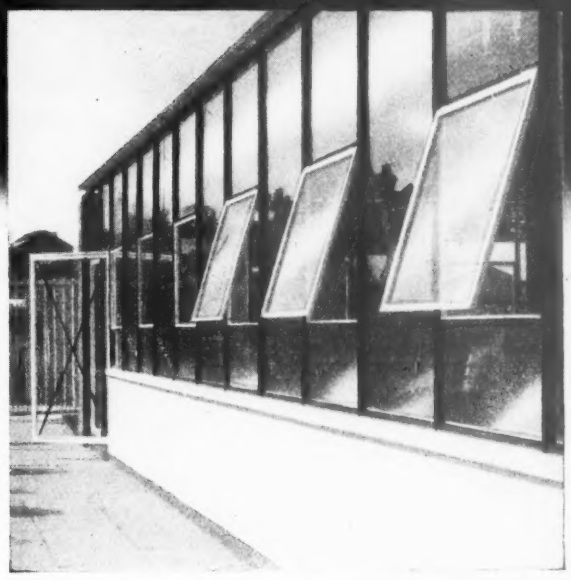

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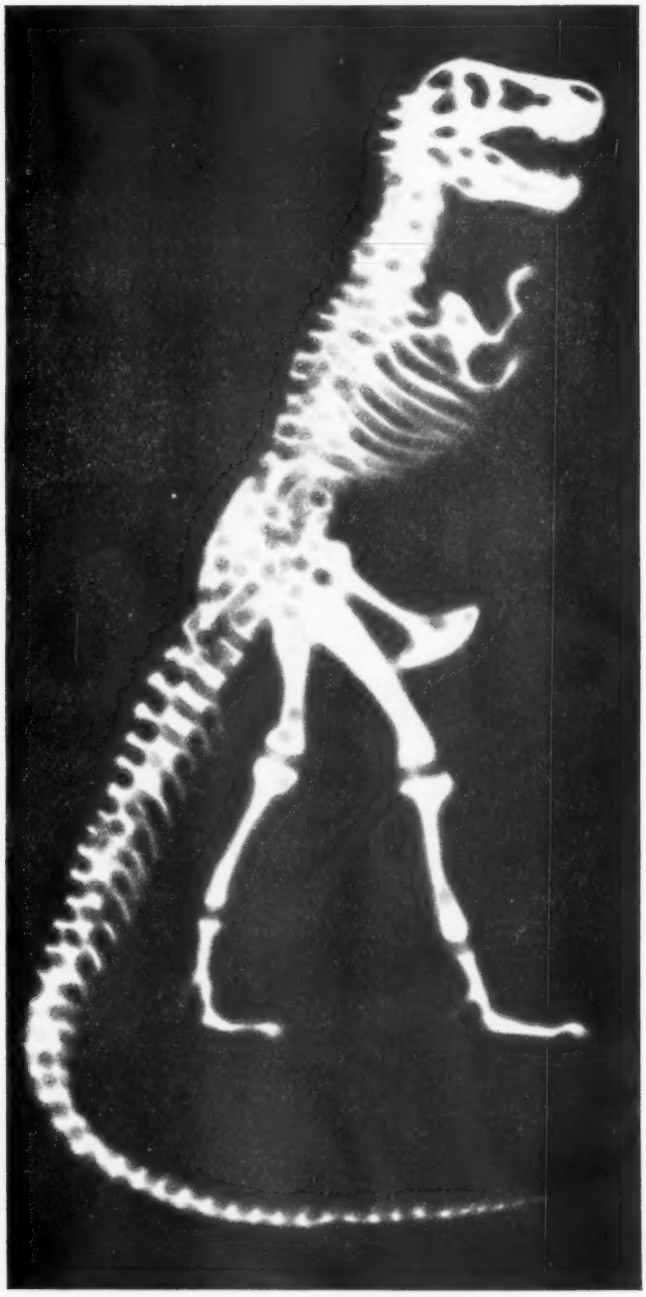

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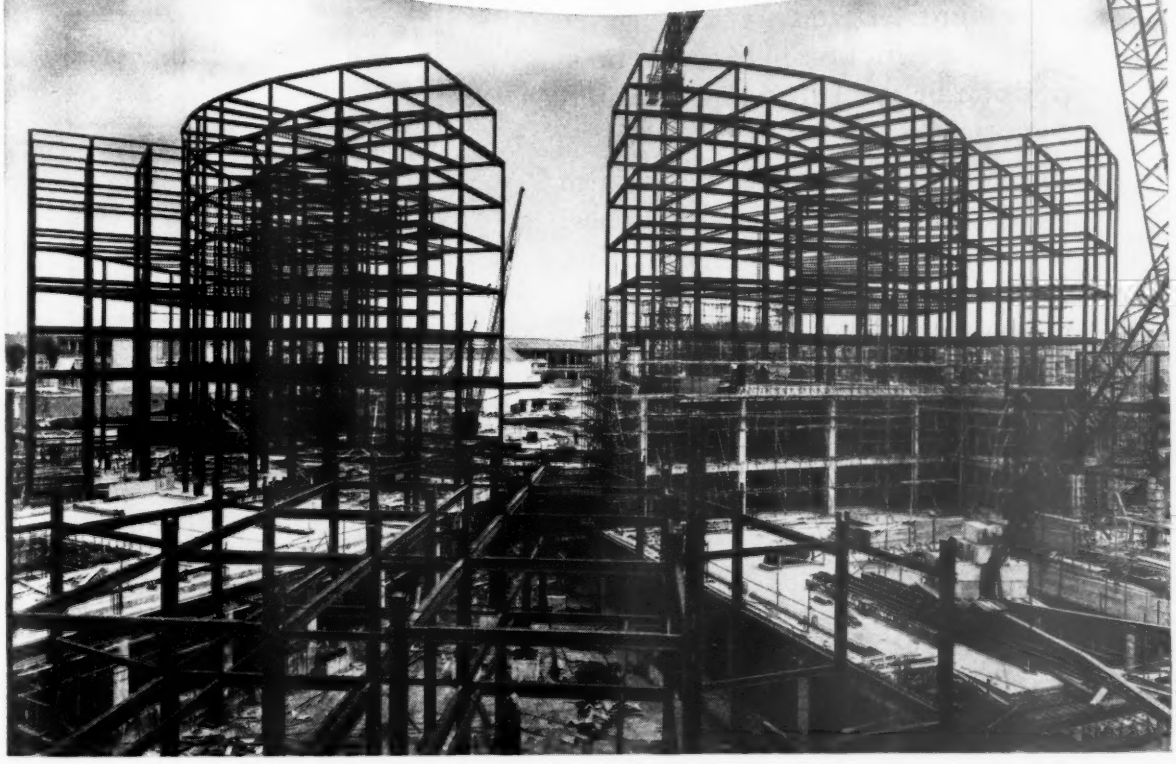

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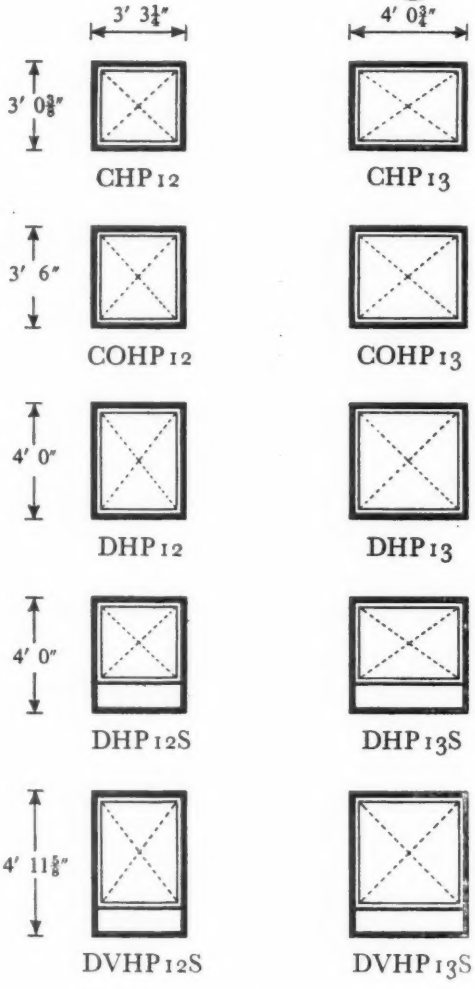

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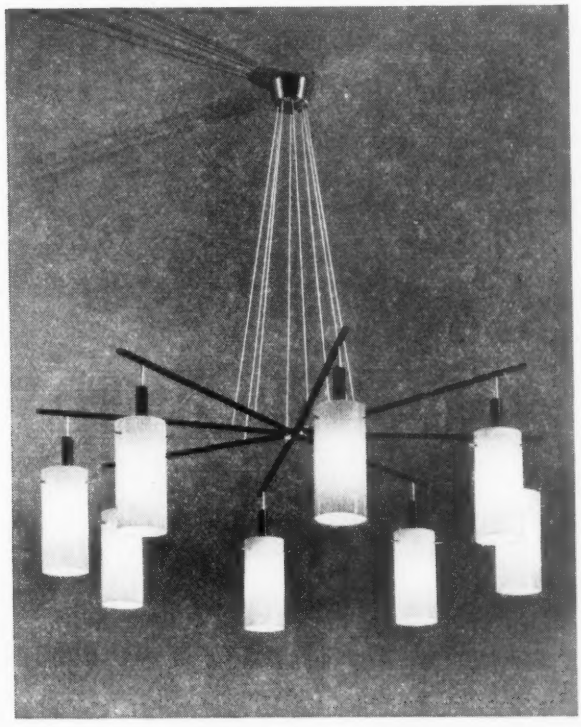

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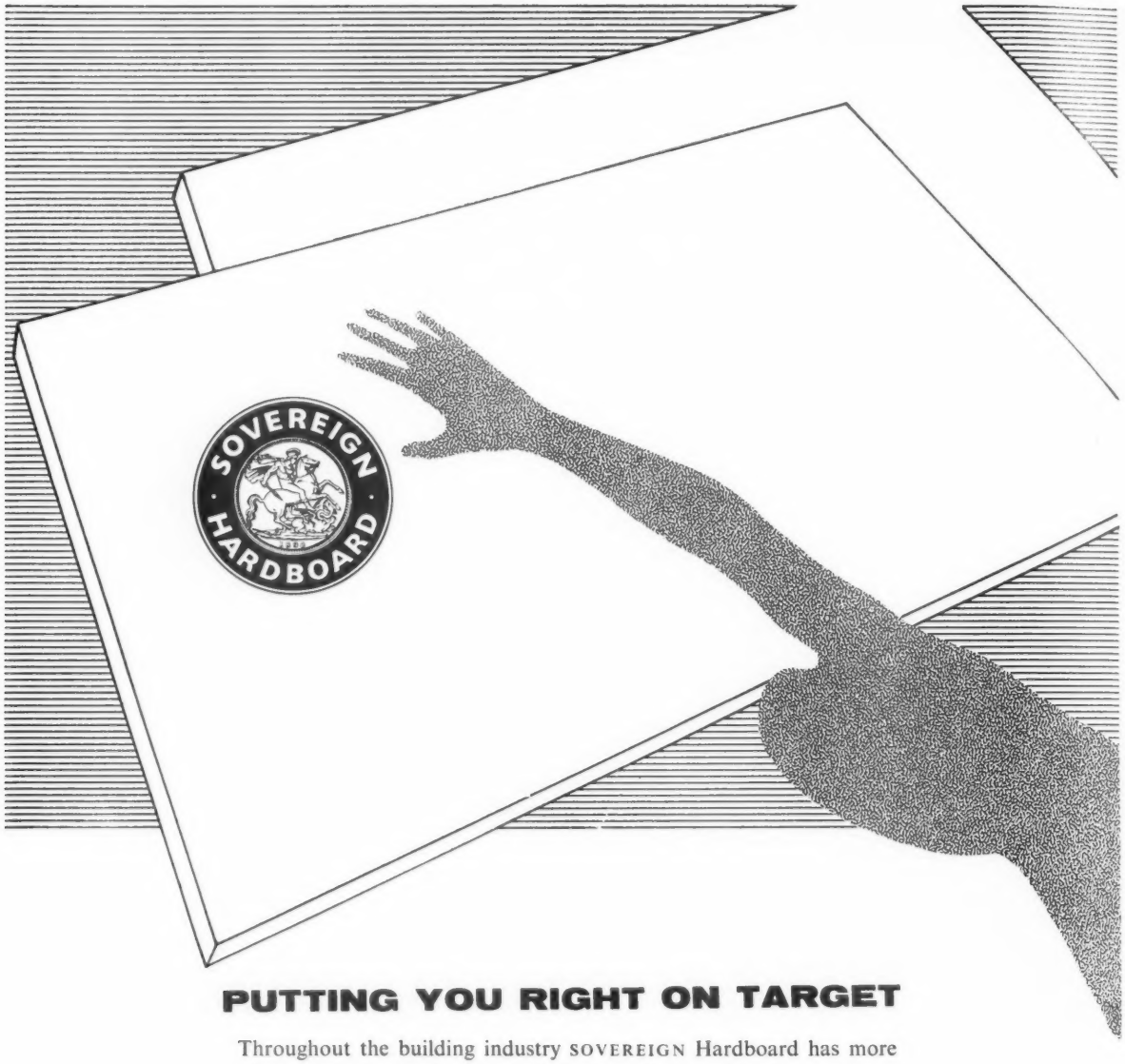

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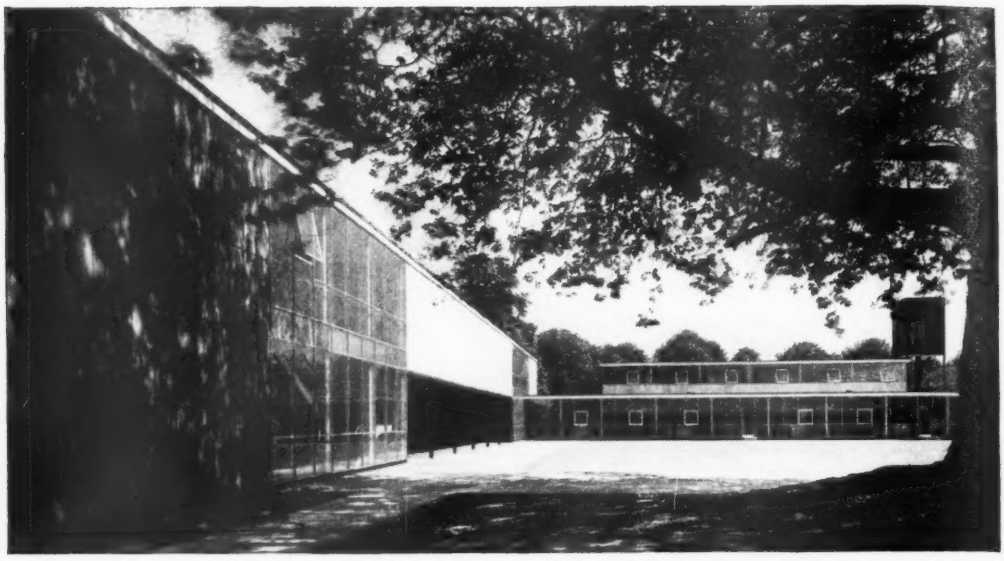
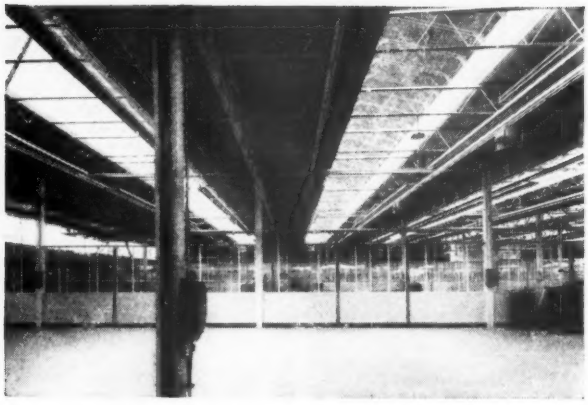
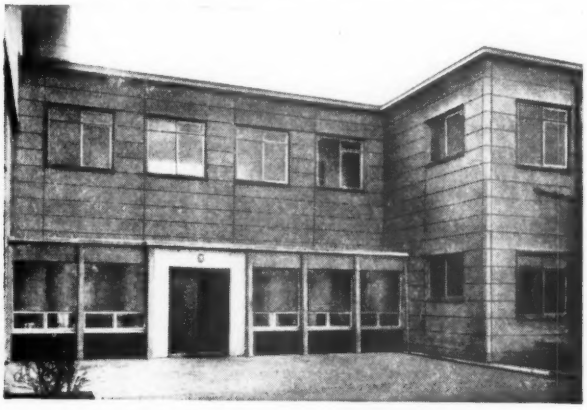


Right: L.C.C. Spencer Park Secondary School. Professor Sir Leslie Martin, former Architect to the London County Council. Architect in Charge: J. M. Kidall, A.R.I.B.A.

Below: New Transistor Factory for Mullard Limited, Southampton. Architects: Wallis, Gilbert & Partners.



Below: Territorial Army Centre, Edinburgh. Architects: G. L. Walls & Duncan.



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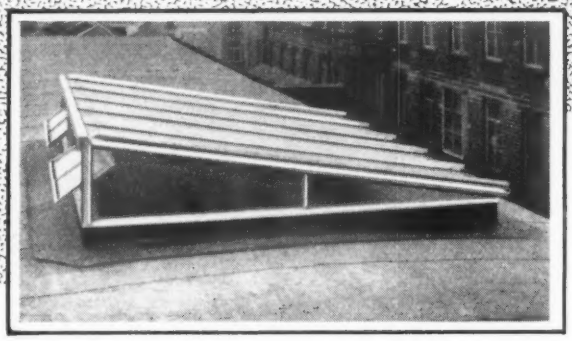

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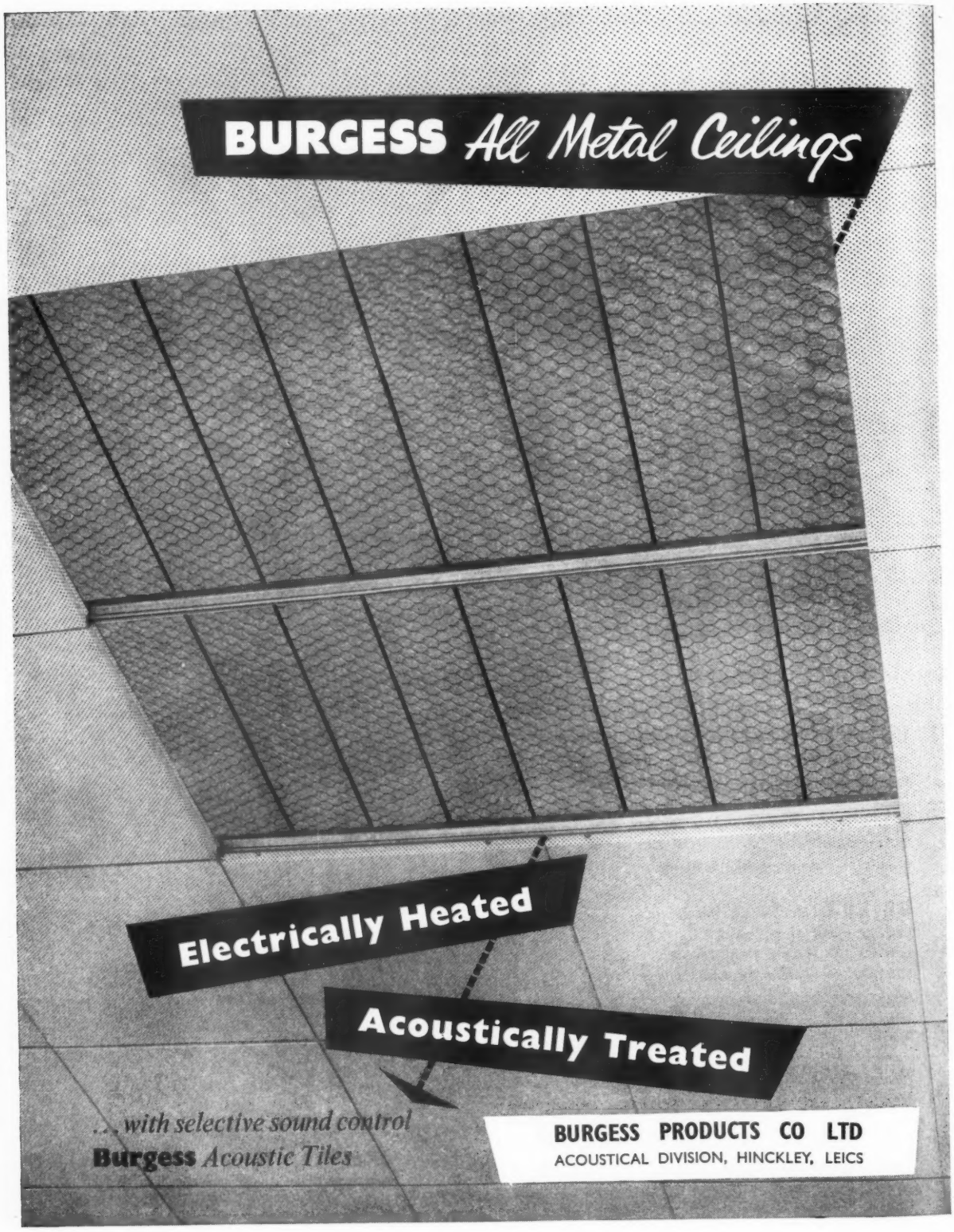
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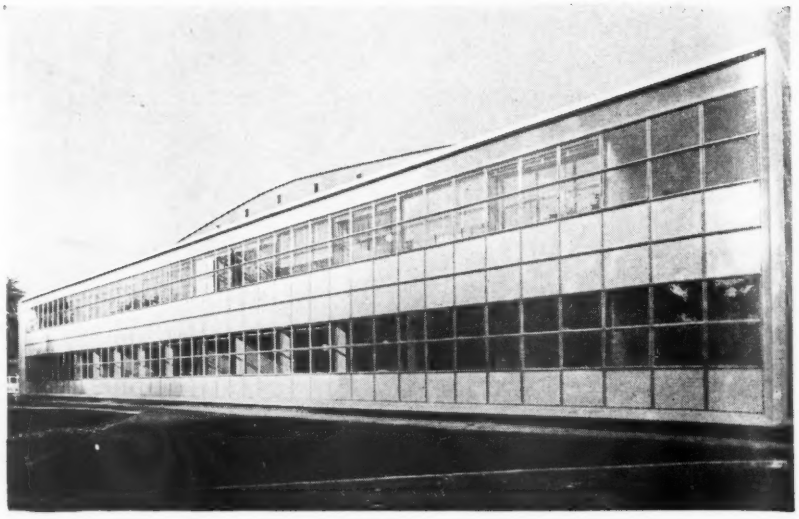
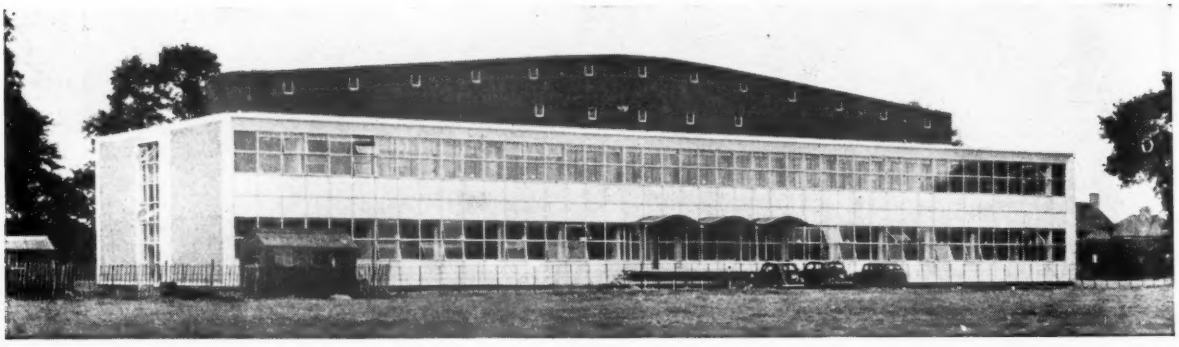
P.262

British Aluminium in Laboratory Construction



Designed by the Chief Architects Division, Ministry of Works



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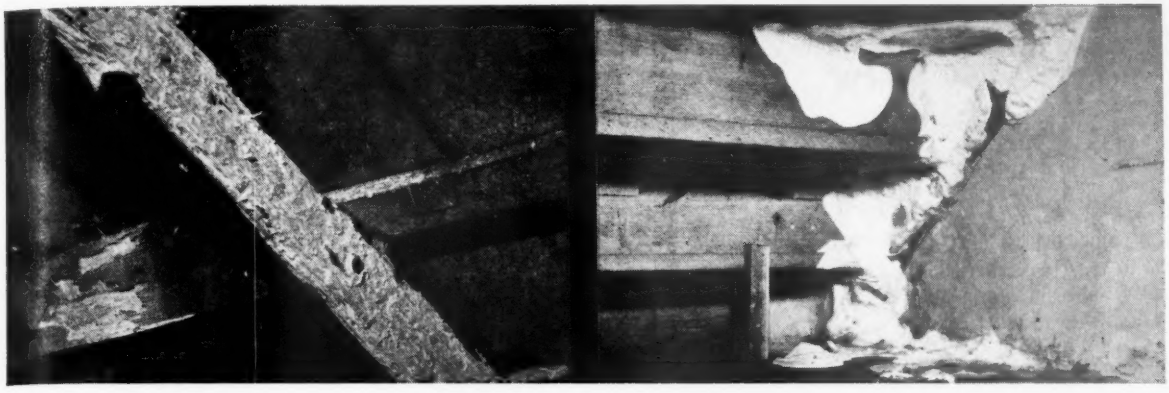

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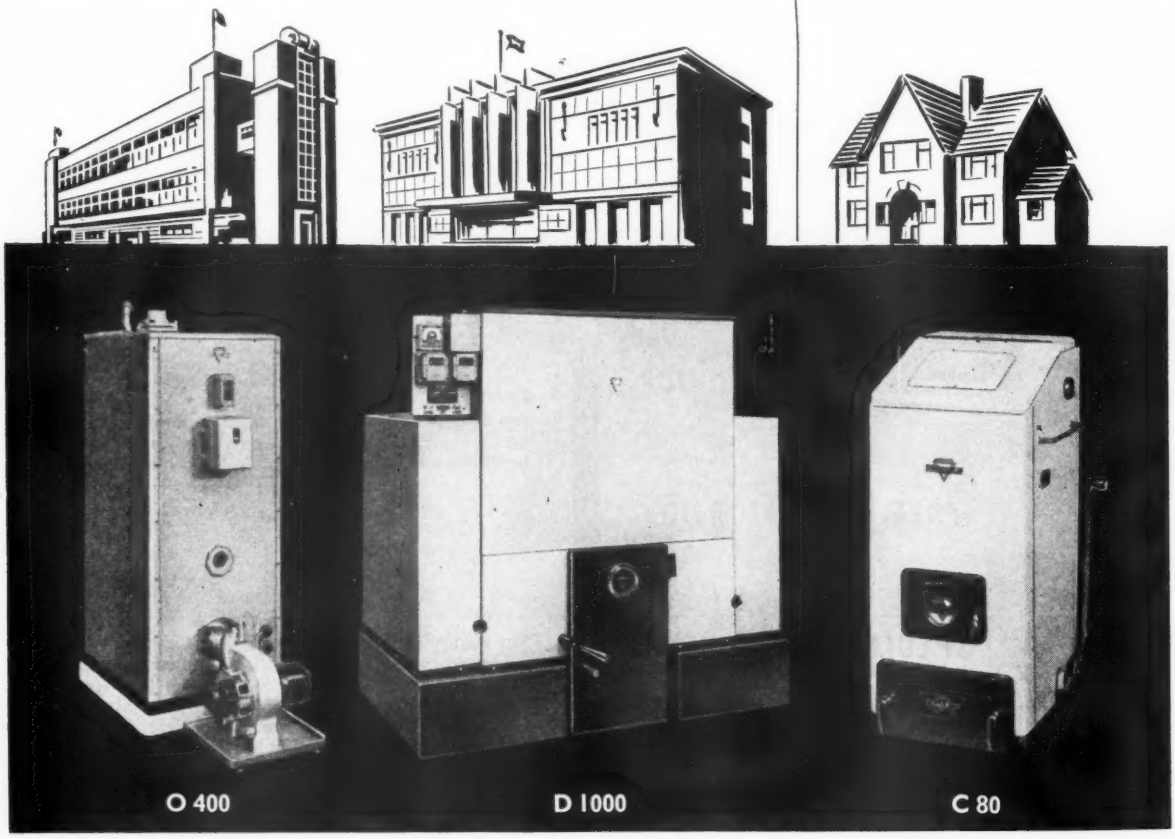

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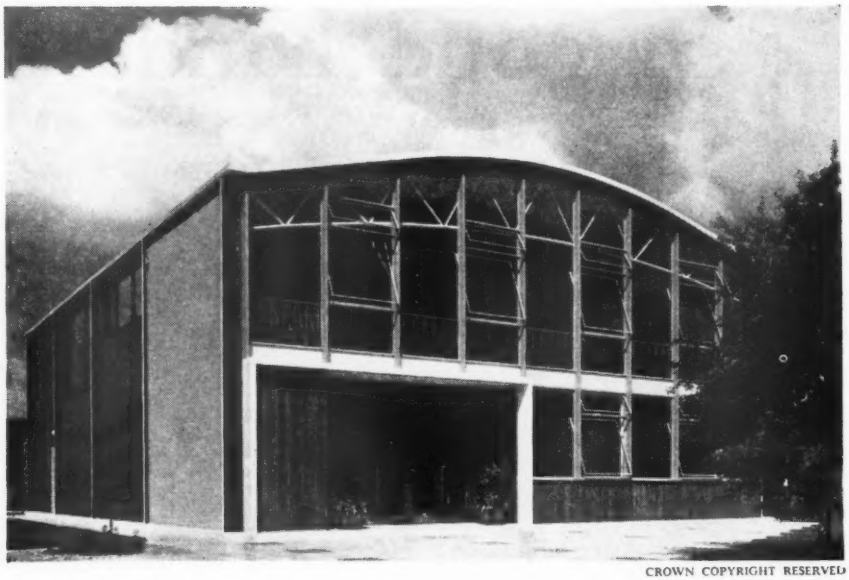

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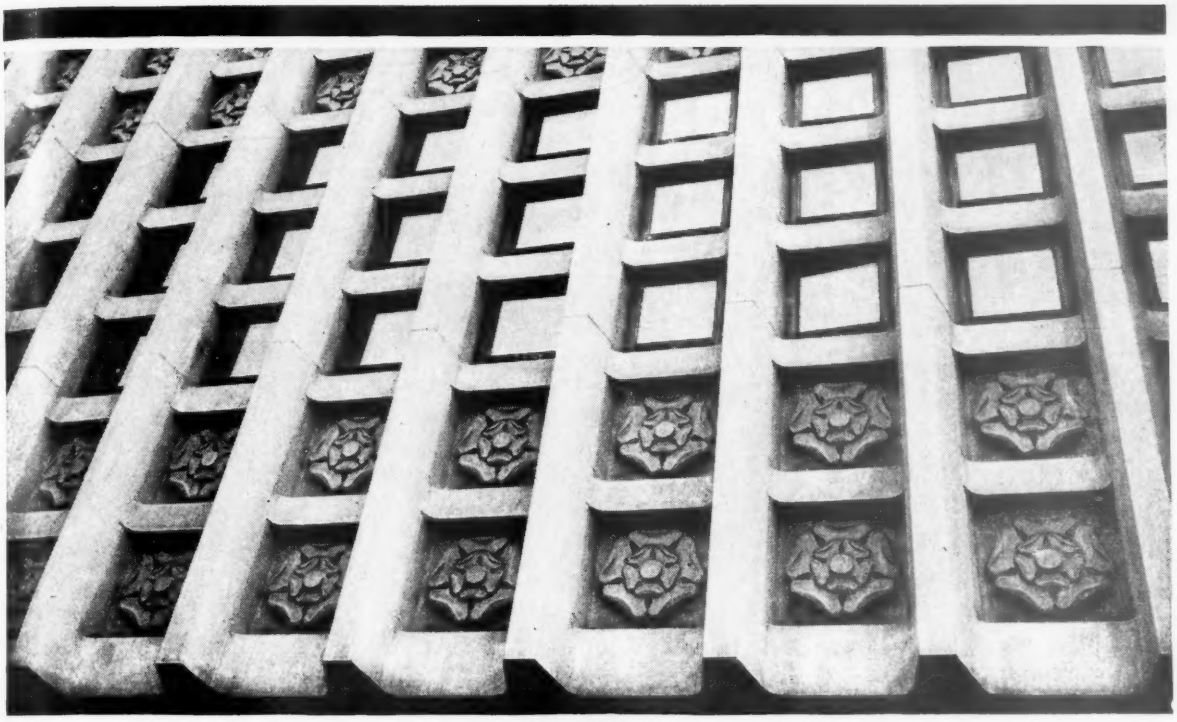

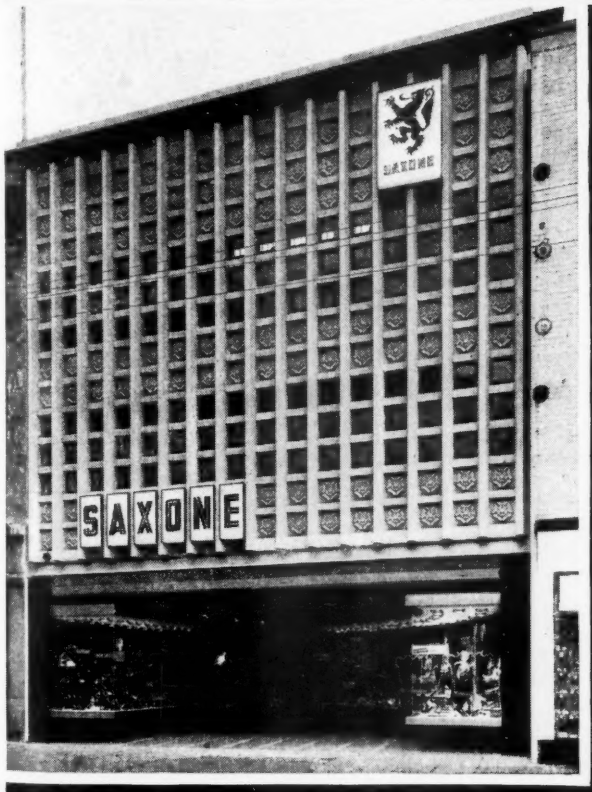

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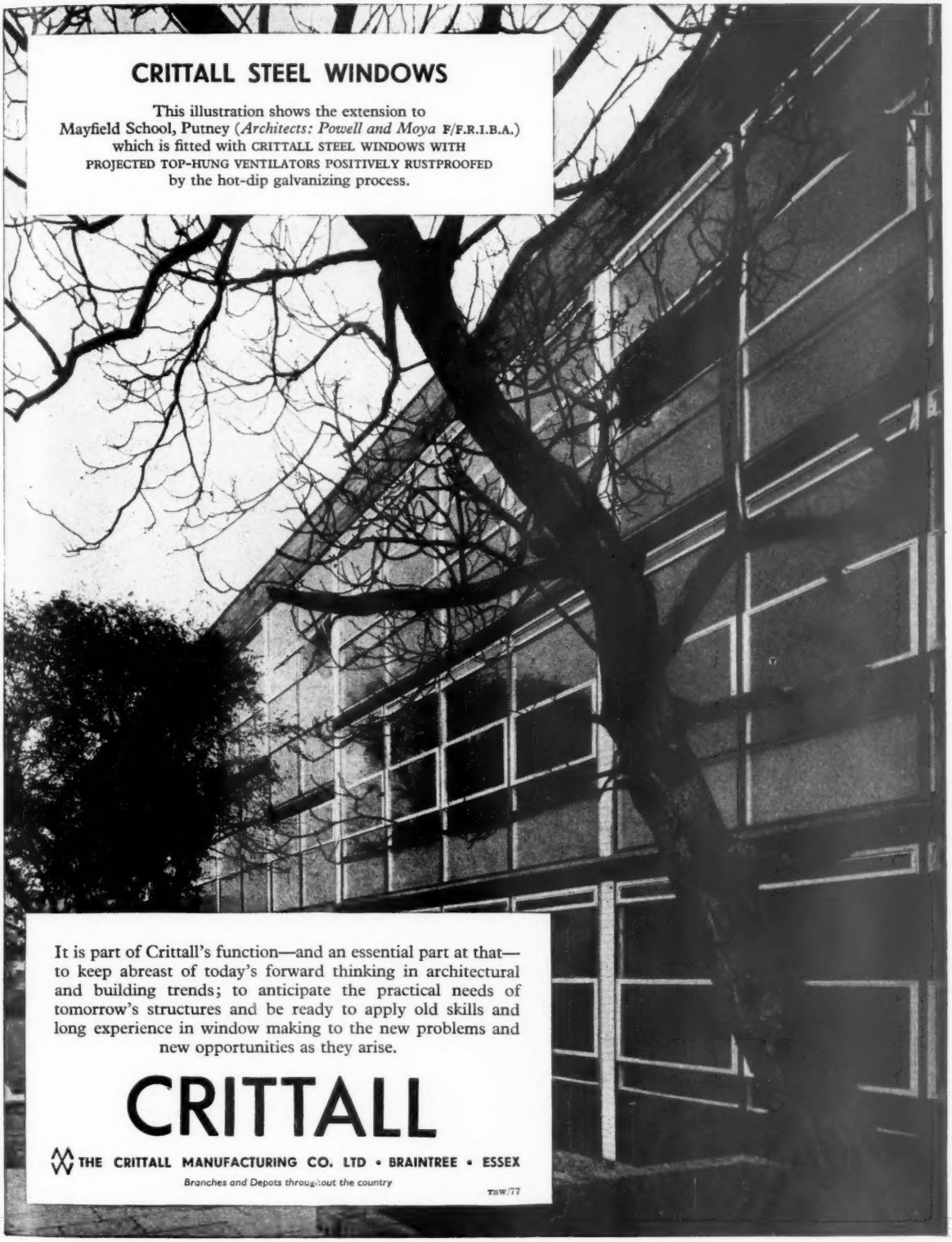

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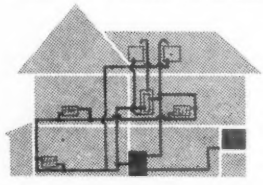

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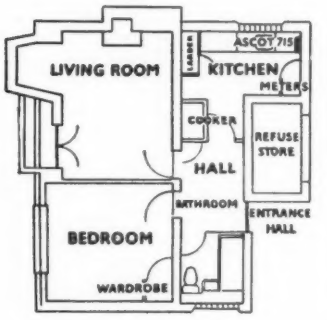
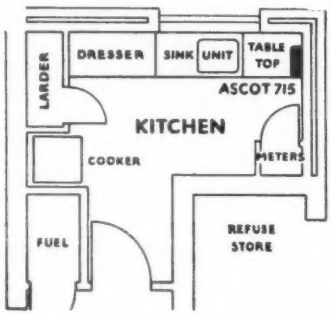
As part of its redevelopment scheme for The Drive, Walthamstow, the Walthamstow Borough Council, has recently built 28 flats in two, three and four storey blocks. To provide an instantaneous hot water service Ascot 715 "Balanced Flue" Multipoint Gas Water Heaters were installed in the kitchens of all the dwellings which vary in size from bed-sitting-rooms to two-bedroom flats.

The photograph above shows a three and a four storey block at The Drive and the plans below show details of a single-bedroom flat in one of the three-storey blocks.



SINGLE-BEDROOM FLAT



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APRIL 1958 THIRD SERIES VOL. 65 NUMBER THREE SHILLINGS AND SIXPENCE

EDITORIAL

N.Z.I.A. Hon. Fellowships for the President and Secretary, R.I.B.A.

On 5 March Mr. Kenneth M. B. Cross, President, R.I.B.A., and Mr. C. D. Spragg, C.B.E., Secretary, received at the hands of the High Commissioner of New Zealand at New Zealand House, the diplomas of Honorary Fellowship of the New Zealand Institute of Architects which the N.Z.I.A. had asked Sir Clifton Webb to present on their behalf. Mr. R. H. Uren, Dip.Arch.(Auck., N.Z.) [*F*], who was also to have received his diploma of Honorary Fellowship, was unfortunately unable to be present owing to illness.

Honours

Robert H. Matthew, C.B.E. [*F*], Professor of Architecture at Edinburgh University, has been elected Associate of the Royal Scottish Academy.

Sir Giles Scott, O.M., D.C.L.(Oxon.), LL.D.(L'pool), LL.D.(Cantab.), R.A. [*F*], has been elected to Honorary Fellowship of Trinity College, Toronto. Sir Giles was architect for the College Chapel.

Sir Roger Makins and Mr. John Hay Whitney, the U.S. Ambassador, looking at the One Hundred Years of American Architecture Exhibition.

One Hundred Years of Architecture in America

The exhibition was opened on 25 February by Sir Roger Makins, G.C.M.G., K.C.B., a former British Ambassador to Washington, in the presence of the American Ambassador, Mr. John Hay Whitney. The President, Mr. Kenneth Cross, was in the Chair.

In his opening remarks, Sir Roger said that whereas in the 18th century architects and their patrons made the Grand Tour of Europe, culminating in Rome, today one made a grand tour of the U.S.A.

There was no greater index to the natural expression, vigour and variety of American life than their architecture.

It was a constant wonder, indicative of energy and vitality but also of financial and material resources.

Sir William Holford [*F*], in proposing a vote of thanks to Sir Roger Makins, said that American architecture was a facet of the immense productivity of the country. It represented an enormous theatre for architecture both native (Henry Hobson Richardson, Frank Lloyd Wright) and 'guest artists' from Europe (the Saarinens, Gropius, Mies van der Rohe). America was now beginning to export its native and imported products—in its U.S. embassies abroad.

Sir William said he had noticed on his visits to the U.S.A. that Americans were not so worried about tidiness. Their subtopias were far worse than ours.

The exhibition was sponsored by the Fine Arts Committee of President Eisenhower's People-to-People Programme, and was designed by Frederick Gutheim for last year's A.I.A. Centennial Exhibition in Washington.

It was first shown in this country at the Edinburgh Festival, and additions were made for the R.I.B.A. showing of selected photographs from Annual Honour Awards of the A.I.A. and examples of work from American architectural schools. The exhibition attracted a large number of visitors and closed on 22 March. A small selection of illustrations is given on pages 184–5.

Institute of Architects, Pakistan

An Institute of Architects has been formed in Pakistan, and membership is open to members of the R.I.B.A. The following have been elected Honorary Officers: Mr. M. A. Mirza [*A*], President; Mr. M. P. Mistri [*F*], Vice-President; Mr. Zahir-ud-Deen Khwaja[*A*], Secretary; and Mr. J. S. Peters [*A*], Treasurer.

Any inquiries or communications should be addressed to the Secretary, Institute of Architects, Pakistan, Block No. 83, Karachi, 1, Pakistan.

Mr. Donald Gibson moves to the War Office

The Secretary of State for War has approved the appointment of Mr. Donald E. E. Gibson, C.B.E., M.A., M.T.P.I. [*F*] as Director-General of Works in the War Office, and of Mr. William Gerachty as Assistant-Under-Secretary of State (Works).

Mr. Gibson and Mr. Gerachty will be the joint heads of the new organisation to be set up in accordance with the recommendations of the committee under the chairmanship of Lord Weeks which reviewed the arrangements for deciding upon and carrying out Army Works Services at home and abroad.

Mr. Gibson is a member of the R.I.B.A. Council, and has been County Architect, Nottinghamshire, since 1955. His paper on 'Buildings without Foundations' given during last session will be remembered for the interest it created. The JOURNAL offers its congratulations to Mr. Gibson.

Sir Alfred Bossom

Sir Alfred Bossom, Bt., M.P. [*F*], has announced that he will not seek re-election for Parliament. He has represented the Maidstone Division of Kent as a Conservative since 1931.

Except when he was joined for a time by Mr. Thomas Braddock [*F*], Sir Alfred has been sole spokesman for the profession in the House of Commons during the last 27 years, and he played a leading part in 1937 and 1938 in securing the passage into law of a Bill to amend the Architects' Registration Act of 1931, the effect of which was to restrict the use of the name of architect to persons in the Register.

In 1948 Sir Alfred published a book, *Our House, an Introduction to Parliamentary Procedure*, and today at the age of 76 is actively supporting the Monorail project to serve London Airport.

It is to be hoped that when Sir Alfred retires a successor or successors will be found from among the membership to represent not only their constituents but the cause of architecture as well.

Finnish Rugs at the V. & A.

The exhibition of Finnish Rugs organised by the Finnish Society of Crafts and Design was opened on 7 March by the Finnish Ambassador and closes on 4 May.

It is the finest of its kind yet seen in this country for splendour of colour and subtlety of design, and the presentation by the Finnish architect, Mrs. Johansson-Pape was very well handled.

The ambassador in his opening remarks referred to these long-napped rugs as *objets d'art* and they fully deserve to be accorded the first exhibition devoted to a contemporary craft to be held at the Victoria and Albert Museum.

Arttu Brummer, who died in 1951, inspired the development of the modern art rug, and one of his pupils, Gunvor Grönvick, designed many of the 'tone' rugs in which the colours are graduated and blended and which gives the present exhibition its distinction.

Council Business

A Meeting of the Council was held on 4 March, with Mr. Kenneth M. B. Cross, President, in the Chair.

The Council were informed that the Prime Minister, the Right Hon. Harold Macmillan, M.P., had accepted the Council's nomination for election as an Honorary Fellow.

It was reported that Mr. Norman H. Fowler [*F*], President of the West Yorkshire Society of Architects, had been elected Chairman of the Allied Societies' Conference for the Session 1958–59, and would therefore become a Vice-President, R.I.B.A., under the provisions of Bye-law 28(1)(b).

The Council accepted the invitation of the Birmingham and Five Counties Architectural Association to hold the British Architects' Conference at Coventry in 1962, and the invitation of the Sheffield, South Yorkshire and District Society of Architects and Surveyors to hold the Conference at Sheffield in 1963.

The Council noted with appreciation a report from the Public Relations Committee that the Civic Trust had made a grant of £1,000 for the production of two extra copies of the Subtopia Travelling Exhibition. It was hoped that the extra copies would be available by the autumn. It was agreed to send the Council's thanks to the Chairman of the Civic Trust.

After further review of the circumstances, the Council reaffirmed their decision that the Institute supports the application of the Town Planning Institute for the grant of a Royal Charter.

On the recommendation of the Public Relations Committee, it was agreed to begin negotiations for the presentation of an exhibition of work by Arne Jacobsen at the R.I.B.A.

The Council also agreed to make a grant of £400 towards the cost of showing an exhibition of the work of Le Corbusier in London under arrangements to be made by the Arts Council.

The Council approved a proposal that in future a diploma should be awarded to the builder of a building for which the designer is awarded an Architecture Bronze Medal. In addition, a new design for these diplomas, submitted by the Public Relations Committee, was approved.

On the joint recommendation of the Science Committee and the Committee on By-laws and Building Regulations, comments on the Thermal Insulation (Dwellings) Bill were sent to the Ministry of Housing and Local Government.

While expressing the Institute's agreement with the intention of the Bill to increase the standard of thermal insulation in dwellings, it was suggested that this might better be achieved through the medium of Model By-laws. It was also suggested that the restriction of the use of certain materials might be unwise as leading to avoidable increases in cost.

Other notes from the Minutes are given on page 210.

Joint Consultative Committee, Procedure Notes

The Joint Consultative Committee of Architects, Quantity Surveyors and Builders have issued the following Procedure Notes.

Issue of Bills of Quantities. It has been brought to the notice of the Joint Consultative Committee of Architects, Quantity Surveyors and Builders that there is an increase in the practice of issuing bills of quantities in sections over a period after a date for submission of tenders has been fixed.

The Committee recommend that, save in exceptional circumstances, the whole of the bill should be issued to the tenderer before the date for the submission of tenders. In the very limited number of instances where this is impossible, adequate time should be allowed, after the issue of all relevant documents, for the contractor to give proper consideration to them before submitting his tender.

Prime Cost Items. The Joint Consultative Committee of Architects, Quantity Surveyors and Builders are concerned at the large proportion of provisional sum items appearing in contracts. The Committee feel that an excessive number of these sums is often evidence of a failure adequately to plan in advance and they strongly recommend that such sums should be reduced to a minimum in the interests of more efficient, and therefore less expensive, building.

Income Survey

As part of their approach to the problem of establishing equitable rewards for doctors, the Royal Commission on Doctors' and Dentists' Remuneration are conducting a comparative income survey involving twelve professions. They have asked for the Royal Institute's co-operation in this and as it was the Ad Hoc Committee's intention anyway to undertake an inquiry into architects' incomes, the Council have readily consented. A questionnaire drawn up in collaboration with the Royal Commission was accordingly issued during the last week in March to a 20 per cent sample of the corporate membership in the United Kingdom—some 3,000 architects. With this were covering letters from both Mr. Richard Sheppard, Chairman of the Ad Hoc Committee, and Sir Harry Pilkington, Chairman of the Royal Commission. Mr. Sheppard acknowledges in his letter 'the undeniable nuisance of filling in a pretty voluminous paper' but points out that this is a unique opportunity to get reliable comparative figures, gathered on a common basis. 'For the first time we shall have something more than hearsay to guide us in assessing how much better or worse we fare than other professions.' Members concerned are urged to return the completed forms not later than 15 April.

The Level of Building Output

The volume of building and civil engineering work done in 1957 was about the same as in 1956. The total value of work done (including repair and maintenance as well as new building) was £2,141 millions, £64 millions or 3 per cent more than in 1956, but this increase in value can be attributed entirely to the rise in building costs: new building work in 1957 cost on average 3 per cent more than in 1956. Although the level of building activity was high at the beginning of 1957 (the volume of output in the first quarter was 5 per cent greater than in the first quarter of 1956), there was a downturn in the spring and in the last quarter output was 3 per cent less than in the corresponding quarter of 1956.

Building output in 1958 is likely to be below the high levels reached in 1956 and 1957. Since capital expenditure in the public sector is to be kept at the 1957 level in money terms, an increase in volume could only be achieved through a reduction in building costs. Local authority house building will certainly be curtailed. House building for private owners may not suffer, provided that the necessary credit can be made available by the building societies. The number of houses started for private owners in recent months has been well maintained. The latest forecast of expenditure on new building work for private manufacturing industry in 1958 is that it will be somewhat lower than in 1957.

Conference on Architectural Education

At the request of the Council, the Board of Architectural Education have made arrangements for a Conference on Architectural Education. The Conference is residential and will take place at Magdalen College, Oxford, from 11–13 April. The Chairman is Professor Sir Leslie Martin, Ph.D. [*F*]. Those taking part will include a substantial number of laymen as well as architects engaged in teaching and in practice.

The subjects for discussion will include the following:

Architectural education: the needs of the community and recruitment to the profession.
Training up to the level of registration.
Advanced training and the development of research in Architecture.

The Conference is planned as a series of free discussions to which it is hoped all the participants will contribute.

It will not be open to the Press but a verbatim report will be taken for the consideration of the Council and the Board of Architectural Education. After consideration it is hoped to issue an account of the discussions for publication.

R.I.B.A. Prizes and Studentships

On the invitation of the President of the R.I.B.A., Mr. Edward D. Mills [*F*] has undertaken to give the Criticism of the drawings submitted in competition for the R.I.B.A. Prizes and Studentships, 1958–1959.

Mr. Mills's Criticism will be delivered at a general meeting of the Institute to be held in February, 1959.

R.I.B.A. Diary

THURSDAY 3 APRIL, 12.30 p.m.—TUESDAY 8 APRIL inclusive. R.I.B.A. offices and library closed for Easter holiday.

TUESDAY 15 APRIL, 6 p.m. Presentation of Royal Gold Medal, 1958, to Robert Schofield Morris, B.Arch., F.R.A.I.C. [*F*] (Canada).

SATURDAY 19 APRIL—THURSDAY 1 MAY. Exhibition of *Architecture in South Africa.* Mon.–Fri. 10 a.m. to 7 p.m., Sat. 10 a.m. to 5 p.m.

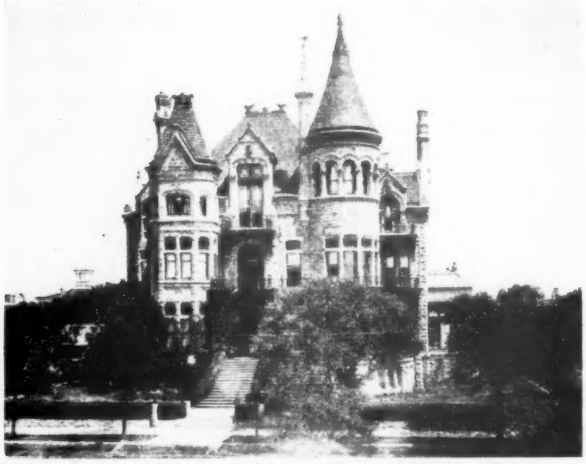
MONDAY 21 APRIL, 6 p.m. Library Group. Mr. Walter Ison, F.S.A., will introduce an evening on Christ Church, Spitalfields.

FRIDAY 2 MAY, 10 a.m. to approx. 5.30 p.m. Symposium on *Design Pays.* Tickets are still available from the Secretary, R.I.B.A.

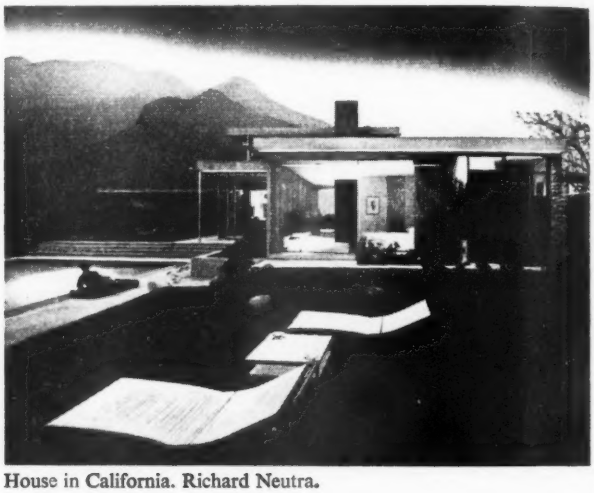
TUESDAY 6 MAY. 6 p.m. Annual General Meeting.

Pennsylvania Academy of Fine Arts, Philadelphia, 1871–76. Frank Furness.

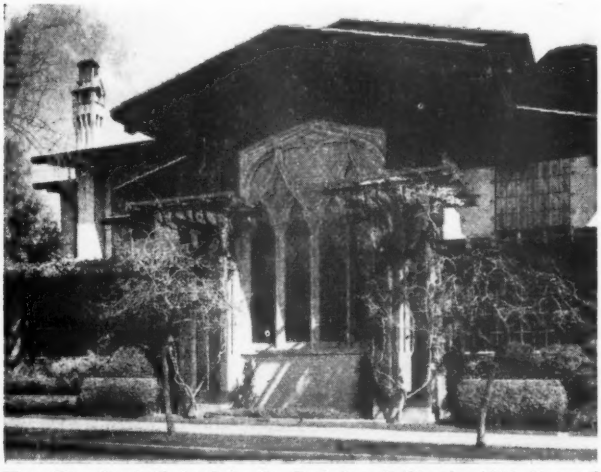
Kresge Memorial Auditorium, Massachusetts Institute of Technology. Eero Saarinen & Associates.



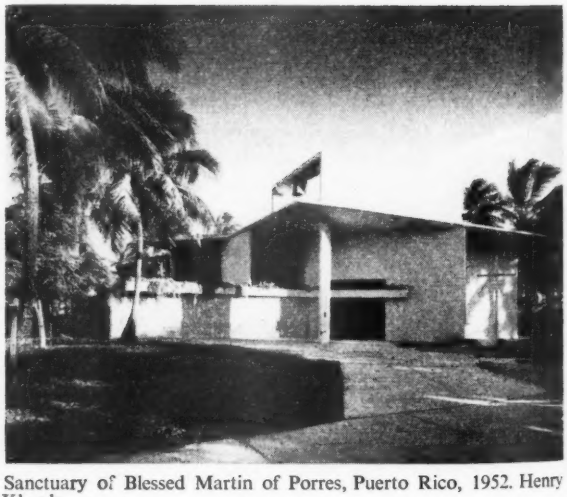
Walter Gresham House, Galveston, Texas, 1885–92. Nicholas J. Clayton.



House in California. Richard Neutra.

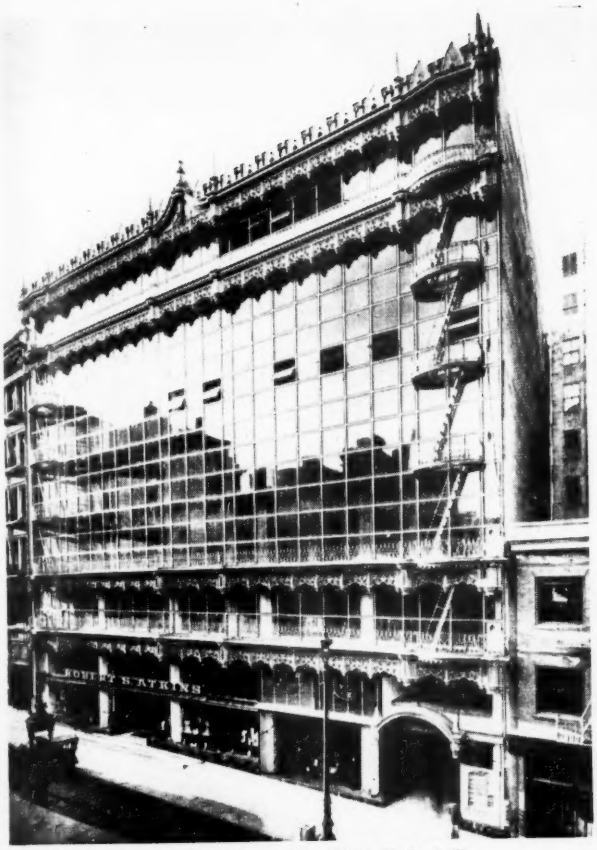


First Church of Christ Scientist, Berkeley, California, 1910. Bernard Maybeck.

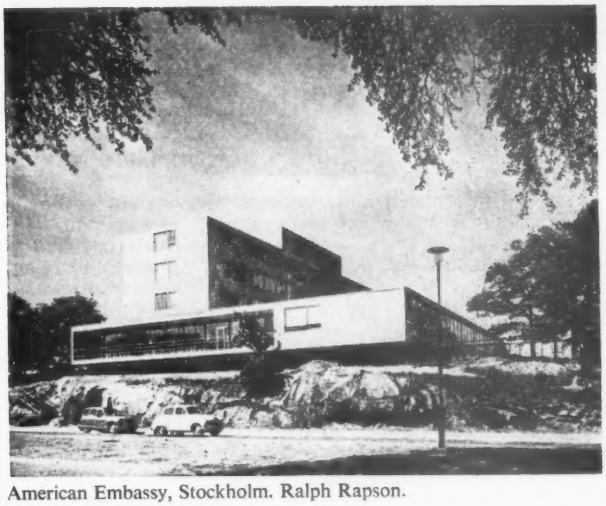


Sanctuary of Blessed Martin of Porres, Puerto Rico, 1952. Henry Klumb.

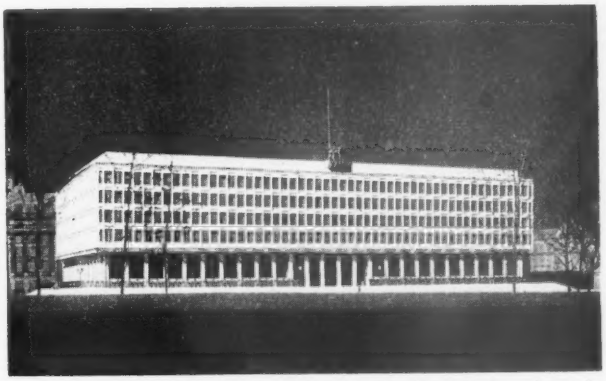
1857–1957 ONE HUNDRED YEARS



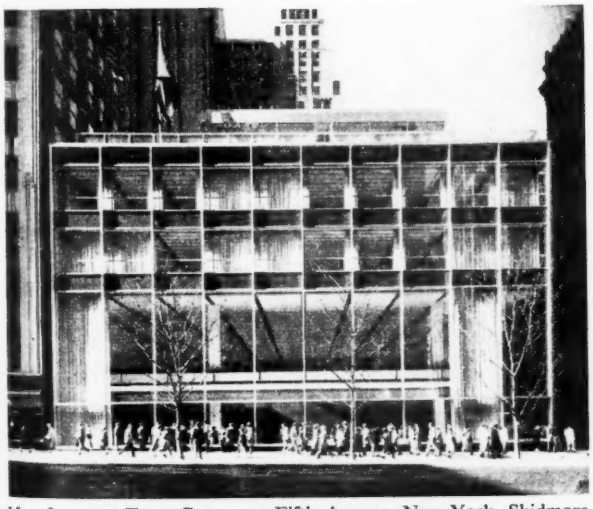
Hallidie Building, San Francisco, 1918. Willis Polk & Co.



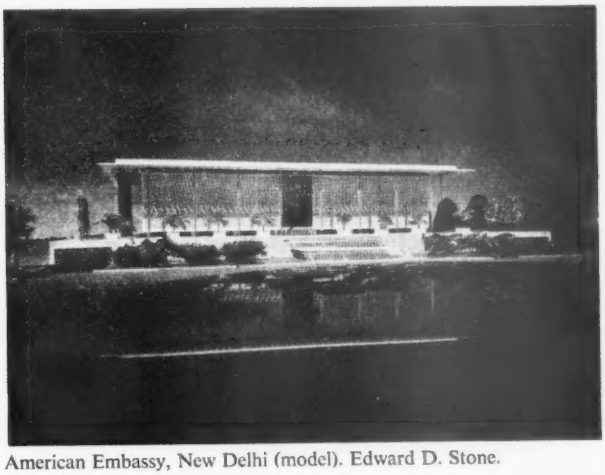
American Embassy, Stockholm. Ralph Rapson.



American Embassy, London (model). Eero Saarinen & Associates, in association with Yorke, Rosenberg & Mardall.



Manufacturers Trust Company, Fifth Avenue, New York. Skidmore, Owings and Merrill.



American Embassy, New Delhi (model). Edward D. Stone.

The Architect's Role in Society

By Sir John Wolfenden, C.B.E.

Given at the R.I.B.A. on 4 March, The President, Mr. Kenneth Cross, in the Chair

IT IS WITH the greatest possible diffidence that I venture to address this distinguished gathering this evening. I appreciate very deeply the honour you do me in inviting me to be here. And I appreciate also (that is, literally, I value at its proper price) the responsibility which falls upon me as a result of my temerity in accepting your invitation. But I hope you will believe me when I say, with complete sincerity, that I have humbly looked forward very much to this opportunity of our taking counsel together, in order that we may, at the least, understand each other the better. I know that you are all experts, in the theory and practice of architecture and, doubtless, in many other accomplishments as well. I am expert in nothing: it is part of the duty of a Vice-Chancellor to know (or to pretend to know, or to go through the motions of knowing, or to give a plausible impression that he knows) a smattering of many things. If he once begins to know too much about any one thing he becomes dangerous, at least in the eyes of that particular colleague who is paid to be especially expert in that one thing. When I first became a headmaster, 24 years ago, I had high-minded and perhaps starry-eyed notions that I might spend my time training the minds and characters of the rising generation: at the end of five years I had learnt all there was to know about two things, bank overdrafts and septic tanks. When I first became a Vice-Chancellor, eight years ago, I looked forward to a certain amount of *otium cum dignitate*, or at least the chance to read, sometimes, a good book: I have in fact spent most of my time in the last eight years as an amateur, unskilled, non-union clerk of works—with occasional more public forays into fields less respectable and sometimes more controversial. So it is not being arch or mock-modest when I try to make it very clear indeed that I am, among you, a complete layman, a genuine—in the proper sense of the word—idiot. But I am always ready to learn, and if I give offence it will be, I beg you to believe, from honest ignorance and not from any cultivation of the modern practice of deliberately insulting one's hosts.

It is one result of the way I was brought up that when I am confronted with a difficult question I turn for help to either Plato or Aristotle or both. I know that that is nowadays an unfashionable practice; but that fact does not, to me, mean that the practice is *eo ipso* reprehensible. In Plato's *Republic* (401), in the unfashionable translation of Jowett, I find these words:

'We would not have our guardians (that is to say, our ruling class) grow up amid images of moral deformity, as in some noxious pasture, and there browse and feed upon many a baneful herb and flower day by day, little by little, until they silently gather a festering mass of corruption in their own soul. Let our artists rather be those who are gifted to discern the true nature of the beautiful and graceful; then will our youth dwell in a land of health, amid fair sights and sounds, and receive the good in everything; and beauty, the effluence of fair works, shall flow into the eye and ear, like the health-giving breeze from a purer region, and insensibly draw the soul from earliest years into likeness and sympathy with the beauty of reason.'

These words are, I well know, familiar to you; but I hope you will forgive me for reminding you of them.

It is no part of my intention to defend Plato's theory of art; still less to defend his oddly puritanical views about censorship or about the deliberate use of the arts for purposes of moral discipline. But without committing ourselves to agreement with any of that, can we not still learn something from the actual physical background which he was taking for granted, when he wrote, as an influence? It needs more imagination, historical and aesthetic, than I possess to see in my mind's eye what Athens really looked like, as the backcloth to daily life, when Plato lived in it. You, with your sharper senses, can see it not as it is to-day, not simply as a breath-taking wonder to the visitor, certainly not as merely a set of mechanical puzzles for the archaeologist, but as quite straightforwardly, the daily parallel to our own—what?—Regent Street, or Piccadilly, or Ludgate Hill or Whitehall? This was the ordinary everyday commonplace background, the streets along which chattering men and women—I'm quite sure the Athenians chattered—walked and children played. Man, those men, made that background; they built the buildings, carved the stone, fashioned the statues, laid out the theatres. Man, those men, used that background; they did not (forgive me for a thought so obvious) design it for you and me to visit as a ruined Wonder of the World; they built it all to live in, to walk in, to work in, to talk in, to worship in, to grow old and die in. Those men made that background. To what extent did it make them? Plato, you see, has led us, not for the first time, to the heart of the question.

Nobody can tell exactly how much influence the actual buildings of Oxford and Cambridge have had on generation after generation of undergraduates. Nobody can tell how much influence the buildings of the newer universities will have on their sons and daughters. But the contrast between the physical environment of the older universities and the physical environment of what are sometimes called, with a touch of derogatory contempt, 'the redbrick universities' is a real contrast. I for one am very ready to reject, with a good deal of indignant argument, any patronising attribution of inferiority to the newer universities simply by reason of the differences between the building materials of which they, as contrasted with their elder sisters, are constructed. That there is a difference is obvious enough. That the difference represents a whole series of other differences, economic, social and historical as well as purely constructional, is probable enough. What effect that difference may have on human life and thought is a fascinating speculation. So let us, fascinated, speculate.

I am afraid you must face the responsibility, gentlemen, that you are the creators of the background against which your fellow humans live and move and have their being. It is not, I know, given to every architect to build an Athens or an Oxford; and I do not wish to exaggerate. (No one architect, indeed, designed the whole of Athens or the whole of Oxford.) But there are some who are called upon to plan whole towns, or whole areas of great cities, or even whole universities. And the responsibility is a very solemn one indeed. From your own point of view there are so many factors and considerations to be borne in mind. You have to take into account the existing contours of the land, and all kinds of practical and unromantic matters like drains, heating, services, as well as approach-roads and, it may be, bus-stops, shopping-centres, car-parks and the prevailing wind. You also have to deal with clients, whether individuals, borough councils or corporate bodies, who perhaps do not know their own mind—except to the extent of constantly changing it. Almost invariably, I imagine, they want something which you know very well they cannot get for the price which they are willing or able to pay. Yes, I know that you have all these practical problems. These are all, if I may be forgiven for saying so, part of the set of conditions within which your self-expression is to realise itself. They are part of the material with which you work. And there are the other limitations as well which spring from the mechanical properties of steel, brick, concrete and glass. This all adds up to a formidable total of what may seem to be restricting factors—and I do not doubt that in my ignorance I have omitted many which might be included. But when the whole tale is told may I make two observations?

The first is one which applies to all artists, in whatever material. Any artist has to cope with materials: that is part, an extremely important part, of being an artist. It seems to me to be mistaken to talk of an artist's 'mastery over his material'. For that suggests a conflict, an opposition between a creator coming from outside and a recalcitrant servant whom he is trying to subjugate. The essence of an artist's work is a use of materials, but a use which is humble and respectful, and (if I may be allowed the word) affectionate; so that the result flows from a co-operation between the two and does as much honour to the materials as to the use of them. When a poet or a painter or a musician uses words or paint or sound as an artist should, two things happen which are fused into one, he expresses something through this material and his material expresses something through him. Either without the other is without significance. And it is only by accepting and respecting the nature and the value of his material, by co-operating with it and adopting the discipline which it in a metaphorical sense imposes that the artist can himself become articulate. From this necessity the architect is no more free than any other artist. Indeed, I would guess that he is the more subject to it simply because his material is so complex. A poet knows what he can do with words, a sculptor knows—or laboriously learns—what marble will allow him to do: an architect must respect, as the materials of his craft, not only steel and lift-shafts and heating systems, but beyond and behind all that the variable and inconstant whims of his very human clients.

My second observation is aimed at architects in particular, and we will leave other artists out of our consideration for the moment. When you have brought together into affectionate consideration all these material factors, there is still one extremely important question. In its crudest form it is this: what sort of building, or university, or town do you produce at the end? Let me try to be more explicit. Grant that there are certain requirements to be fulfilled, in size, cost, accommodation and so on. There will, I imagine, be a good many possible answers, a good many different possible embodiments of the desiderata. What is it that distinguishes one such embodiment from another? What, to put it crudely again, determines your final decision that this, of all the possible solutions, is the right one? Or, to put it another way, why are the recognised masterpieces of architecture recognised as being masterpieces? My bet is that a good many people could make quite a fair shot at what I called just now fulfilling the requirements. I am fool enough to think that in a small way I could do it myself, given time. But I am emphatically not fool enough to think that when I had finished I should have produced a work of art. Those last words I have used quite deliberately, because it is works of art that you, by the high and noble ideals of your profession, are called upon to produce.

I am anxious that this point should not be misunderstood. I am not using the words 'works of art' in any airy-fairy sense. Still less am I going to embark, here and now, on a discussion of theories of aesthetics. But I do mean that there is a difference between merely 'fulfilling the requirements', as I have called it, and producing a building which is properly associated with a profession. You see, it is just simply and unavoidably true that you do construct objects which come within the range of qualifying to be called works of art. For however those words may be defined, there is artistry in them over and above both 'fulfilling the requirements' and the applied science of building. Art and craft are both involved; and no doubt, as you live through your professional lives, you become both more artful and more crafty—as we all do in our own special fields of activity.

But—and here is your distinctive pride as architects, which is also your distinctive and particular professional problem as architects—society cannot do without you. It is possible to conceive of a world without any of the other arts. That world would, of course, be incalculably poorer than the one we know. But it is just conceivable that we could exist without pictures, without music, without sculpture, even without books. All these are just beyond the barest necessities of life, beyond what is provided as the minimum level of existence. There would still be, of course, the music of the birds, of the streams, of the wind in the bare boughs of trees: but I doubt if they could be called art in any conscious human sense. And there would still be Nature's pictures and sculptures, in autumn leaves and apple-green skies and in rocks and snowdrifts. But none of these is man-made art. If we peel off (or scrape off) all these adjuncts of human civilisation, we come down to the fundamental art—of building. Even the tailor or dress-designer is less fundamental than you are.

More than that. If we abandon these rather stark criteria of primitiveness and come within the age and atmosphere of civilised man, I think your opportunity and your responsibility become clearer still. Wherever we live, wherever we go, you, as I heard it well said the other day, are talking to us all the time. We do not, most of us, look at pictures or listen to music or read poetry to each other all day long; we should, I suspect, begin to regard poets and musicians and painters as bores if they insisted on our giving attention to them throughout our waking hours. But that is exactly what you do insist on our doing. For wherever we go and wherever we live your works are with us, all round us all the time; and I expect that when we enter the world to come there will be houses and streets and towns awaiting us, either gloriously a-glitter with all the jewels of the Revelation of St. John the Divine or more practically constructed of heat-resistant asbestos slabs.

It is not difficult, therefore, to see how important is the architect's role in society. Countless examples, each trivial enough in itself, come to mind. The house I live in now is by far the most convenient and by far the ugliest in which I have ever lived. That simple fact (you must take it from me that it is a fact) raises at once several interesting questions. First, can it really be the ugliest if it is the most convenient? On that point I personally have no doubts at all. Come and see it! Since I became a man I have been very lucky. I have lived in two of the most beautiful of Oxford Colleges (again, their beauties are very interestingly different, but they are both very beautiful), in a sedate and seemly late Victorian official residence, in a late Georgian rambler, and now in a splendid Edwardian redbrick oblong box. The rambler was by far the most attractive, but quite ruinous to live in; the present one, all on two floors, no cellars, no attics, no mystery, no romance, but no dry rot and no Gothic windows, by far the easiest to live in. It is to me quite plain that it is possible, however awkward it may be for some theorists, for a house to be at the same time ugly and convenient or deeply attractive and quite hopeless as a 'machine for living'. Then, secondly, and arising from this, is the ugliness all on the outside and the convenience on the inside? Actually, I spend remarkably little time standing outside my own house contemplating it. As the limerick says, 'It's the people in front get the jar'. And yet, even I am conscious of it, though I suspect that I am more conscious of the outsides of the houses of other people. Whether I like it or not, and whether I like them or not, I cannot ignore the outsides of the buildings I pass every day. Or if I do, I have reached that stage of anaesthesia which may well be Nature's safeguard for those of us who live in suburbia. More generally—and taking leave now of my own personal environment—every house and every town hall and every other building has, as Aristotle might have said, both an inside and an outside. Frivolous as this may sound, I suspect that somewhere in that sentence is a rather profound truth. Even if we get as near to bedrock as to say that ultimately the job of the architect is enclosing a bit of space, then at once problems of profound simplicity arise. Is the space that is so enclosed to be the scene of the worship of God in full religious awe? Then the space so enclosed is Liverpool Cathedral. Is it to be the scene of the fission or the fusion of atoms? Then you produce Harwell or Windscale or Dounreay. Is it to be a factory for making banknotes, or a luxury hotel or a tycoon's office suite, or a part of a street in a new town? Do you see what you have done? The space, before you got hold of it, was quite undifferentiated. There is no intrinsic difference between a bit of empty unwalled space on the top of a hill overlooking the Mersey, or on the banks of the Thames

or on the coast of Cumberland. That number of cubic feet of empty air is, so far as I know, just the same wherever you may find it. Its environment is different, of course, and what is below it and around it varies from one place to the other. But in themselves 100,000 cubic feet of space are pretty much the same the world over. Then the architect comes along. And by what he does he gives that empty space all kinds of new properties. Not only does he arrange that there are walls, of stone or brick or glass or concrete, so that the space has an outside covering which passers-by can see. He also, in the same act, gives the space a private interior covering which only those can see who enter it. The outer wall, the public wall, at once enters into a whole complex system of relationships, with other walls, with passers-by, with the weather and with the relentless finger of time. The inner wall, the private wall, has its own set of relationships, almost completely independent of the outward ones, to be entered into only in a domestic and secret and exclusive way. I do not presume to pursue too far this inwardness, and outwardness, for all this must be platitude to you; but I do just want to say that I for one never cease to marvel at the implications, for private living and for public experience, of the act which is so simply described as 'enclosing a piece of space'. What is very clear to me is the profundity of the influence, ceaselessly and remorselessly exercised on every single one of us, for twenty-four hours of each day of our lives, by the results of your space-enclosing activities.

It goes further than this—and here is something which I cannot attempt to explain. When you have done this, when you have put some walls round some empty space, you have not only given that space some walls which in turn enter into relationships with other walls. You have done something else, something which I do not profess to understand. You have —whether you know it or not—actually altered the nature of the space which you have enclosed. Do you see what I mean? Somehow or other, I do not know how, you have given that space a meaning. Before, it was, not only in my description of it but in actual fact, undifferentiated, unspecified empty space; it had no adjectives of significance. But when you have done your work it has meaning, it has a specific nature, it has adjectives. It may be friendly, homely, aseptic, stark, dark, miserable, bright, cheerful, or even destructive of body and soul—for I suppose even prison cells are space enclosed by architects. You may even, and this is the greatest mystery of all, make a piece of space numinous, so that a man says, as he enters Liverpool Cathedral or even a no-longer-wholly-enclosed space like Rievaulx Abbey, *innocui vivite, numen adest*. Somehow or other you bring awe and the holy into a piece of formerly empty space. And that is not just architecture, it is alchemy as well.

Is there any wonder, then, that we more ordinary people look upon you and your works with a good deal of emotion? There is, I know, much violence in the judgments of many of us ignorant folk about particular pieces of painting or music or poetry. But I believe that there is even more violence in the adjectives which are used about buildings. This is interesting, and I venture to suggest, both tentatively and presumptuously, two reasons for it. I suggest, first, that the vividness of public reaction is in direct ratio to the complexity of the art which is being judged. A picture is in two dimensions. It is possible to get excited about it, for any one or any combination of several reasons, one of which may be the degree of accuracy or completeness with which it simulates three dimensions. A piece of sculpture is in three dimensions. And the excitement which it arouses has (so to speak) another whole dimension's-worth of scope. I hesitate to pursue this into arts which are not visual, though I suspect that something similar may be true of the combination of the arts of the musician and the user of words, as exemplified in opera, musical comedy or revue. My immediate concern is with the complexity of the form and the materials which the artist uses. No artist suffers from or rejoices in a greater complexity than the architect. I am thinking not simply of materials in the narrow sense, brick, stone, glass, concrete, steel, but of the vast assembly of different kinds of matter to which you give significant and total form. It has been my privilege to see something, at fairly close quarters, of a considerable architectural enterprise in recent years. It would clearly be improper for me here to express any judgment on the result. But it would be equally improper for me to fail to bear a layman's testimony to the sheer aesthetic and intellectual pleasure of watching the artist at work, of living through the statement of the problem, of being present at the assembling, in imagination, of the fantastically varied elements of the material, and of partaking in a very small degree in the gradual embodiment in visible form of the architect's inspiration. If I may be forgiven the sort of metaphor which on other occasions I regard with some suspicion, the sort of metaphor which depends on the transference to one art of the elements appropriate to another, it is rather like the assembling and conducting of a vast orchestra in the performance of the first performance of a composer's work, the same man being both composer and conductor. Metaphor apart, you are so important, and you invite strong words, of approval or disapproval, because what you construct you compose out of such a variety of materials. Texture, light and shade, scale, balance, proportion, all these are your tools, no less than the more obvious and physical materials. I, for instance, have learnt not only the word 'fenestration' but also something of its significance in the organic whole of a building.

But, secondly, it is not only its complexity which makes the work of the architect a matter of public interest or concern. There is also its plain straightforward importance. For one thing, your works are so damnably permanent. We can ignore music which offends us; we can, if we are fools enough, shut our ears to poetry; we can even, if we feel like it, slash a picture with a palette-knife. All these we can destroy, or ignore; and we can treat them, if we are so disposed, as ephemeral nonsenses. But you cannot just ignore buildings; you cannot ignore, if you live in Reading, the Pearl Assurance Building; you cannot ignore the house you live in. It is there, and, for good or ill, you have to live with it. But even the permanence and obviousness of a building are not, of course, the main things about it. The main thing is what I have, I am afraid, said several times already. It is the simple fact that your works are all round us, that they are, in a very real sense, the background of our daily lives; and the influence of that background may be incalculable but is assuredly very real. I believe that it makes a difference to man's very heart and soul if he lives in a gracious and civilised house, and it makes a difference to his heart and soul if he lives in a mean and squalid tenement. Why this should be I cannot, in the last resort, explain. But Plato knew it. Do you remember—'and beauty, the effluence of fair works, shall flow into the eye and ear, like the health-giving breeze from a purer region, and insensibly draw the soul from earliest years into likeness and sympathy with the beauty of reason'. I cannot explain why this should be. But I fancy that the clues are there. 'Insensibly' the soul is drawn. Your influence is not at its strongest when it flows from what is spectacular or dramatic or aiming at effect. The unobtrusive natural good manners of a building or a crescent or a square can be, I humbly suggest, more influential than something which shouts louder. We do not need to be professional psychologists to appreciate the profound and lasting nature of insensible or unconscious influence; all good education is based on it. And, finally, Plato's last words. The soul is insensibly drawn 'into likeness and sympathy with the beauty of reason'. I have attempted no explicit theory of aesthetics. Indeed I may well have revealed my incompetence in this whole field. But I take comfort, at the end of the day, in my master's ending. Let those who will argue about the True, the Beautiful and the Good. There is no ultimate conflict between them. There cannot be any such conflict, for they are all part of the nature of the eternal and the divine. It is your high task to embody them all, to materialise these forms, to make for all of us things beautiful and true and good to be the background whose ceaseless influence will make our humble ordinary daily lives more true, more beautiful and more good.

VOTE OF THANKS

Sir Howard Robertson, A.R.A., D.Litt. (Reading), Past-President R.I.B.A.: It is extremely pleasurable and very salutary to be observed by an observer so modest, so kindly, but so shrewd, as Sir John Wolfenden. He is a man who has packed into 50 years the experiences that most of us would be proud of in 70 years. I am not giving away his age; you can look it up in *Who's Who* if you are anxious to know. But there it is—and Sir John seems to me to be one of those people who is going to have more and more problems to solve. His is the kind of personality which immediately pops up when somebody says, 'Well, here is an awkward thing to deal with. Who shall we have on the committee?—Sir John Wolfenden!' It is very awkward for him, but very nice for the nation.

Sir John is absolutely involved in building. Anybody who is creating a new university must be. He is practically in the building business. He lives among drains right now. I hope that his overdraft is a little stronger—I mean weaker—or whatever it may be. But there it is, and so far as I can see it is going to go on for a long, long time. But he is by no means a clerk of works—not at all. He can do things that a clerk of works cannot do; he can read a plan upside down, and believe me, in spite of his modesty, he is a wonderfully practical man and a very shrewd judge of building; if anybody thinks he is not, then let them work for him. So he has really given us something which has been very much thought out and very much from his heart.

There is one little mystery that he has not touched upon, and I do not think that he wanted to, because he avoided saying it; but that little saying about 'beauty lying in the eye of the beholder'—I have never quite got to the bottom of it, and I wish that he had had time to expatiate on it. You see, we have had an eminent architect, now deceased, who could not bear the Regency in any form whatever. We have an equally eminent architect, happily not deceased, who adores the Regency. We have had John Ruskin; now we have got John Betjeman. What are we to make of these opposites in appreciation of architecture? I do not think that the problem has been solved by anybody. I have been on the Royal Fine Art Commission for a few years; it certainly has not been solved there. Nor is there any sign of that happening.

The Vice-Chancellor of Reading University may live in an ugly, red, oblong house, but we can congratulate him on his address, and in voicing these congratulations, I ask you to accept my proposition of a vote of thanks for—and I use the old phrase that is so apt—a wonderful evening, and I think that we are very lucky to have had Sir John with us. I hope that he will come again in ten years' time when he has finished his university.

Mr. John Gloag [*Hon. A*]: We have been privileged to hear something quite remarkable in the way of a thoughtful appreciation of the civic, moral and artistic responsibility of the architect to society. I am extremely glad that Sir John Wolfenden laid great stress on the fact that the architect is an artist. There has been during the last thirty or forty years a suspicion of the word 'artist' in relation to architecture. There has been a puritan period, a very important, significant and necessary puritan period, in architecture as well as in a good many other things.

We have reformed society in a way that would have been considered absolutely impossible 50 years ago. We have reformed the environment of large numbers of people in this country. The people who have given solid permanence—I am so glad that Sir John stressed that—to so many things that are being done for the improvement of the life of thousands of people are architects. There are differences of opinion about the way it is being done. There are some people who like the past. There are some people who continue to dwell and persist in dwelling in the past. There are even great men who cannot appreciate the real force of what has been done in architectural environment.

The architect has in the last 20 years done more not only for the present generation, but for future generations. People are growing up in these magnificent surroundings—I use the word 'magnificent' with deliberate exaggeration (which surely may be permitted to somebody who is half-Welsh)—and I cannot believe that this will be without its impact, not on the people who are living in them now, I admit—though it may be to their convenience, for some of them have been uncomfortable—but on their children and (this is the significant thing) on their children's children. The change which your profession has brought in England, and of course in Scotland and Wales, too, will probably undo the disastrous effects of the first Industrial Revolution. I used to think that it would take 150 years to get that barbarian outbreak out of the civilisation of this country. Thanks now to our two revolutions, I believe we shall overcome it within 50 years of my death—and I propose to live quite a time.

It gives me great pleasure to second the vote of thanks to Sir John for his wonderful paper.

DISCUSSION

Professor R. H. Matthew, C.B.E. [*F*]: I have listened with the greatest interest to the Vice-Chancellor tonight. It so happens that this afternoon I was reading a paper which is going to be given to this Institute in a few weeks by a fellow Vice-Chancellor. It is going to be given in a symposium on science laboratories, and it contains, somewhat to my astonishment, the statement that the vitality of the university exists entirely independently of its buildings. I do hope that at the next Vice-Chancellors' Committee our lecturer tonight will convince Sir Eric Ashby that he has really got hold of the wrong end of the stick.

Mr. Maxwell Fry, C.B.E. [*F*]: I want to deal with Sir John Wolfenden's point as to its being the complexity of architecture that arouses such strong emotions.

Having been subjected in my professional life more than most people to emotions directed to what I have offered by way of architecture, I have come to the conclusion that a great part of the emotions that people feel when presented with new architecture is due to the very evident dislodgement of the environment. The environment for people is something of which they can hardly guess the strength; and once established its associational value forms a great and an important part of their lives. Along comes an architect and dislodges this by a new piece of environment, and however we, as architects, might see it as taking its place in due course, most people are quite unable to do this. And yet it is our particular value as architects that, whenever we are presented with a problem—unlike scientists who normally deal in abstractions—we deal in a unity which takes in all the circumstances—the surroundings, the materials and everything else. It is all resolved, nearly at once sometimes, but always in a very short space of time, into a unity, and it is this which we present. It is always new, and it is that which shocks.

I enjoyed the paper more than I can say.

Mr. Harold Conolly, C.B.E., Vice-President R.I.B.A.: I should like to congratulate Sir John on his paper.

Sir John kept off the subject of aesthetics, but could he say how much he feels that the client should interfere with the architect's conception of any building for which he is commissioned? As an official architect, I wonder whether he could come and give this paper to my council some time! The architect who is carried along by the flow of contemporary ideas inevitably comes into conflict with the people who employ him and are paying for the building. How far should a client as such interfere with what the architect feels instinctively is the right way of dealing with any particular problem? Sir John must have been faced with this problem; he will be faced with it again. How far is the layman, informed or uninformed, entitled to interfere with the architect's conception of his scheme?

Mr. Basil Spence, O.B.E., A.R.A., A.R.S.A., Hon. Secretary, R.I.B.A.: I should like to add my own great appreciation of the very beautiful paper that we have heard tonight. I can well remember years ago in Edinburgh, which is my home town, defending a motion that an architect was more of an artist than a constructor. I spoke for the motion because I believed in it. I believed that an architect should be an artist. If he is not an artist, then he should not call himself an architect. There are degrees of artistry, but even to question the necessity of beauty in practical things, I think is almost sacrilege.

I think that this wonderful paper has shown us clearly where our duty lies as artists, and that we must go beyond the normal encompassing of space, the keeping together of the various requirements and looking after the business arrangements

and so on, and become poets and artists beyond.

For that reason, I am deeply grateful to Sir John.

The vote of thanks was carried by acclamation.

Sir John Wolfenden: Really you are extremely generous and very kind and much more complimentary than either I expected or than genuine artistic and aesthetic honesty could justify.

About the client interfering with the architect, could I just suggest as an alternative formulation of this, so that we may see how improper they both are, the formulation: what right has the architect to interfere with the client? I think that if you put it that way, it is an unhappy assumption—which may well be justified in local government; I do not know—that the architect and the client are people who are likely to be in opposition to each other. My experience has not been so. It has been the case, of course, that from time to time architects and clients may experience disagreement about something or other. What they do not disagree about is the fundamental notion, the broad development, of what it is they are both wanting, because if they do disagree about that, then that client ought never to have that architect and that architect ought not to have been such an ass as to take on that client. Having once got the architect and the client to match up to each other in the general notion of what they are after, then at any rate in my experience the thing does more or less work itself out by argument and looking at plans upside down and having them misrepresented to us by our architects—all the ordinary daily tricks of every trade! And then, in the end, we know more or less where we are. But I am quite certain that if there is likely to be at a very early stage a fundamental disagreement between the architect and the client about the broad conception of whatever it is that is being built—whether a town hall or a railway station or a municipal bicycle park—then they had better not join up at all. After that they have got to learn to get on with each other. I deliberately did not say it, but there are elements in the relationship of architect and client which resemble the relationship of husband and wife and either you have got to put up with it or you get a divorce.

On the extremely important point which was made about dislodgement of the environment, I am sure there is an awful lot in this—I wish I had thought of it. I came out of my club at about five o'clock this evening to walk up here, and on the other side of the Haymarket there was a very large, empty space where formerly there had been the Carlton Hotel. I was very shocked. I did not recognise it. I thought I must have turned up the wrong street. There will come a time when that corner will be embellished and made more beautiful than it was before, but at the moment it is a very nasty sight, and I think it is very likely that when it is first filled, naturally one will not like it. I do not know how far that is natural conservatism and how far everybody objects to having something altered that he has got used to. That is one reason why people do not like having false teeth. How far it is just natural conservatism, or how far there is anything genuinely aesthetic about it, I would not claim to know.

As for the curious views which I understand are about to be expressed to you by my friend Sir Eric Ashby, I accept no responsibility for any other Vice-Chancellor, obviously; still less for one who does not even operate in this country. If Sir Eric were a Vice-Chancellor in this country, we would do our best to educate him; but he is outside our own particular range, and although I shall see him myself at the next meeting of the Committee of Vice-Chancellors, I shall not presume to rely on advance notice of what he is alleged to be going to say to attack him, because he is, of course, a scientist, and I am not.

May I most genuinely thank you for your extreme generosity in allowing me to come and allowing me, at any rate so far, to go and get out of the door without being treated as if I were the Home Secretary in Scotland.

Teaching Laboratories

Extracts from the main papers given at the symposium on the design of teaching laboratories in Universities and Colleges of Advanced Technology, held at the R.I.B.A. on Friday 14 March

Sir Keith Murray, B.Sc., Ph.D., M.A., B.Litt., in the Chair

Universities and the Design of Teaching Laboratories

SIR ERIC ASHBY, D.Sc., Sc.D., LL.D., D.I.C. Vice-Chancellor, The Queen's University, Belfast:

In the October number of the ARCHITECTURAL REVIEW there are twelve photographs of post-war university buildings. The legend to these pictures describes the buildings as 'the monumental record of failure of nerve in academic patronage . . . enwrapping an entirely vacuous concept of who, what, and where a university is'. This legend, together with some of the statements in the accompanying article constitute my text. For although I am far less qualified than most practising scientists to speak with any authority on the design of teaching laboratories I have given some thought to the entirely vacuous concept of what a university is. If I say some unpalatable things about what a university is you must forgive me; there is a vulgar little text at the head of that article in the ARCHITECTURAL REVIEW which reminds you that vice-chancellors from redbrick universities are tempted to talk nonsense. So if I am too unpalatable you may comfort yourselves by saying that about vice-chancellors—if about nothing else—the sentiments expressed in the ARCHITECTURAL REVIEW article were correct. Forgive me too, if, in order to stimulate discussion on some of the points I am going to make, I disguise myself as a Philistine.

That article and others in similar vein gave me, and many of my colleagues, the impression that some architects regard a university as a state-subsidised opportunity for their own aspirations. It may be a wrong impression, but in case it is not let me begin by saying emphatically that this is one of the things which a university is not. A university is a society of people. In the Middle Ages universities flourished without any buildings of their own at all, and the vitality of a modern university could be maintained entirely independently of the quality of its architecture. The purpose of university buildings is not primarily to ornament the landscape; it is to keep members of the society, together with their books and equipment, warm, dry, and adequately illuminated. Therefore when a university asks an architect to design a chemistry building, it expects the architect to work from the inside outwards. If the architect can make the building beautiful, so much the better; it is his responsibility to do his best to achieve beauty. But the *purpose* of a chemistry building is to suit the convenience of the society that works inside it, not to elicit the admiration of people waiting at the bus stop on the other side of the road. I hope I have made this point crystal clear, because it is fundamental to all else I have to say.

Now I come to the two positive contributions I have to make. The first is to put before you an unsolved problem in the design of teaching laboratories. Before I take visitors round my university I always explain that we are desperately short of space. Then as we walk round I am always dismayed and embarrassed to find most of the laboratories empty. This is the unsolved problem. As teaching laboratories are designed at present the efficiency of plant-utilisation (as the Americans would call it) is deplorably low.

Here are some figures to illustrate the problem. The largest laboratory in a science department is the elementary laboratory. It is academically more efficient and it saves the time of the teaching staff if all elementary students can do their practical work at the same time. But the elementary class in (say) chemistry does only six hours practical work a week for two terms. In other science subjects the amount of elementary practical work may be even less. Now the university is 'open' from 9 a.m. to 5 p.m. on five days a week and from 9 a.m. to 1 p.m. on Saturdays. This means that the 'plant' is available for its purpose for a 44-hour week. There are about 23 working weeks in the year. Therefore, the elementary laboratories are available for 1,012 hours a year. If we subtract lunch hours over 23 weeks it leaves us with a net availability of 897 hours a year. These laboratories are occupied by students for only 108 hours a year: a 'plant-utilisation-efficiency' of 12 per cent. For 88 per cent of the university's opening time those laboratories will be empty.

The Scottish universities and some universities in England still have large elementary classes. Other English universities begin their courses at the post-intermediate stage and it might be thought that the problem of inefficient utilisation vanishes beyond the elementary stage of teaching. But this is not so. Many advanced courses do not require more than 12 hours a week in the laboratory for 22 weeks. This amounts to 264 hours a year: a 'plant utilisation efficiency' of 29 per cent. In brief, it is only the honours student in the last year of his course who occupies the laboratory for anything like most of the time it is available.

This is the first problem I want to put to the Conference. The present pattern of university teaching and the present design of science teaching laboratories is such that most of the accommodation is not in use most of the time. I have assumed that if a 100-place laboratory is occupied even by five students then the laboratory is being used. I am not discussing with you whether laboratories are large enough for the numbers of students. The problem I bring to your attention is the large proportion of time over which the laboratories are altogether empty.

This brings me to the second contribution I have to make. The Queen's University of Belfast is financed not through the University Grants Committee but by the Northern Ireland Government. Our patron—the Ulster taxpayer—passes the University every day in the bus. Members of Parliament and members of the Public Accounts Committee watch our steelwork go up, scrutinise the imported red bricks, and ask searching questions about the size and cost of our buildings. Accordingly I have to think of suitable ways of satisfying public interest in our very large building schemes. One of my arguments is to point out that the buildings we are putting up will—unless they are bombed—last a couple of hundred years at least; and the amortisation, even of a £2 million building, over 200 years is not very formidable. This argument, I find, gives comfort to rotary clubs and chambers of commerce. But secretly it gives no comfort to me, because I recollect that the design of that £2 million building embodies the ideas (not to say prejudices) of an architect, three or four professors, a buildings committee of laymen, and a vice-chancellor; none of whom are gifted with prophecy. In science it is impossible to build for the needs of the third millennium; and the third millennium is only 42 years away. When I was invited to speak today I was told that the subject of my paper should be the directions in which science teaching is going and the needs for scientific teaching in the future. I hope you will not think me ungracious if I decline firmly to do anything of the sort. It would be an act of crass irresponsibility. The history of science and technology in the last hundred years has been a series of staggering surprises and there is no reason to suppose that future history will have any fewer surprises.

So I want to suggest to the Conference what, in my view, is the only safe policy for the design of science teaching laboratories. It is a view which (if anyone took any notice of it) would be unpopular with universities and architects alike, and the resistance to it would be massive and prolonged. However, here it is. It is that science buildings should comprise elegant and permanent façades containing offices, classrooms, seminar rooms, lavatories, and a library. But the laboratories should be built at the back in such a way that they can be demolished and rebuilt in 40 or 50 years without a qualm of conscience or a twitch of regret. No trouble or expense should be spared over the technical services, the plumbing, the fittings and furniture, and the equipment of these laboratories; but the shell should be regarded as of no permanent value. This, in my view, is the only way architects can safely plan for the future in science buildings: by a self-denying ordinance which will leave a vacant site for their successors to put another building on, in 40 or 50 years' time.

Finally, I have a few words to say about the procedure for putting up university buildings, for this bears on both the points I have made. University government differs profoundly from the government of any other organisation. Policy never originates as directives from above but as pressures welling up from below. It functions as an inverted hierarchy. Therefore when an architect discusses a building with the vice-chancellor he has to remember that he is not talking to a managing director. He is not talking to a man who can say to this man go and he goeth. He is talking to someone whose only power is persuasion, and whose colleagues not only know more about science than he does himself, but have been appointed because of their individuality and originality. Accordingly university science departments embody the personal idiosyncrasies and enthusiasms of individual professors to a far greater extent than the public ever realise. For there is no one inside the university who is qualified to dispute the work of the professor. He may want a steel framework which will carry immense weights, or air-conditioned laboratories, or dark rooms attached to every laboratory, or roofs which will carry glasshouses, and no one of his colleagues can confidently assert that these requests are unreasonable. Nor is it practicable or even desirable for an external assessor—another professor in the same subject—to dismiss the requests of a brother professor as unreasonable. There would be no progress in the techniques of teaching science if all new laboratories were tied to the pattern of existing laboratories. It is precisely because prediction is impossible that a professor and architect designing a new science building should be given the maximum initiative and should be under the minimum restraint. Pooling experience about science laboratories is of course essential, but centralised planning would be a disservice to universities.

One clear way out of this difficulty would be to adopt the second of my two points. If the laboratory is designed and built to last 40 years and not 200, the idiosyncracies of professors could be adopted with a light heart. New professors could ask for fresh laboratories with a clear conscience. The benefits of fresh ideas would be more rapidly incorporated into science departments. Architects would have to face the fact that some of their work will be as mortal as themselves. But for my own part I would prefer mortality with freedom to experiment, if the alternative is being remembered as the progenitor of a race of neo-Gothic or neo-Georgian white elephants.

Planning Buildings for the Teaching of Science and Technology

PROFESSOR S. R. SPARKES, M.Sc., Ph.D., M.I.C.E., M.I.Struct.E., Imperial College of Science and Technology.

The Government's declared intention to sponsor considerable building programmes for education in science and technology probably springs from the achievements of other nations in these spheres. The need for more scientists and technologists is measured more by comparison with other countries than from intrinsic considerations. In Britain the need is being met mainly by expansion of existing universities and colleges but it is not unlikely that the

trends in education will take account of the systems in competitive countries.

The architect needs to know what goes on in his buildings, and as there is no prototype for the higher technological education system now being built up, I make no apology for describing briefly the aims and ends of the continental and British systems.

At the very beginning I should perhaps emphasise that, important as they are, laboratories are not the only teaching medium for the scientist and technologist. The lecture room, the class-room, the lecturer's study, the library, the union and hall of residence all help to create the students' college environment, and although this accommodation has very different requirements from laboratories, this difference is not always expressed architecturally. The argument may be used that there is greater flexibility in future use if an average of all the requirements is provided, but in my opinion this is a bad and inefficient way of achieving flexibility.

The basic difference between the continental and British systems of technological education is that on the Continent a student receives professional training at college. In this country a student receives his professional training after leaving college.

On the Continent lectures are often given to classes of many hundreds who come to the lecture theatre from many different departments. This gives rise to the sort of planning seen at Aachen and Delft where lecture theatres are grouped together and cloakrooms and even refreshment bars are provided.

In laboratories and drawing offices the continental course is rather more closely defined than in the universities and higher technological institutions in this country, but this does not lead to any very great differences in the design of this accommodation.

In the British system, which is likely to be more extended than changed, of ten students receiving a diploma or degree some seven or eight will have started the course together. They will have taken the same subjects at the same time and can be identified as a group, and there is usually a closer association between student and teacher than on the Continent.

University courses in science and technology have been in existence in this country for many years, but the colleges of advanced technology are only now being established for the most part by upgrading existing institutions. The new Diploma in Technology should not be compared with a university degree; it is simply different. Both courses are equally advanced but the emphasis in the diploma course will be on the application of science to technological processes and the development of new processes. The main effect of this on the design of buildings is that the equipment of technological laboratories might have close relation to industrial processes. It is reasonable to assume that when the Ministry of Education produce a bulletin on colleges of advanced technology on the lines of Building Bulletin No. 5, it will have more the pattern of a faculty of technology than of the technical college, and I propose to put forward a possible synthesis of these requirements.

Lecture rooms

In the first year there may be several hundred attending a lecture, and, as in technological subjects the lecturer will always wish to work out a technical or mathematical argument in front of the class, an epidiascope system of projected writing on a cinema screen, as at Aachen, might be required. Most lecture rooms, however, will be required to house about sixty students.

Drawing Offices and Class-rooms

The curriculum of a student of technology usually includes design, working out examples, discussion groups and examinations as well as lectures and laboratory work. In some cases it may prove economical for each student to have his own drawing office place at which he keeps his drawing-board, tee-square and instruments. By providing tables of normal height with removable supports for the drawing-board, the rooms can be used as drawing offices, lecture rooms, for working out experimental results, for working out examples under the supervision of a teacher, for private study and for the exchange of ideas between students which plays such a vital part in their education. Such rooms would probably have a very high intensity of use, and would be of suitable size for future conversion to other uses if required.

Laboratories

Laboratories in colleges of advanced technology are of two kinds; first those dealing with basic principles in which comparatively simple apparatus is set up on benches for each experiment, and where it is possible to allot so many square feet to each place; and secondly those in which the apparatus is bulky and permanent or semi-permanent, and where the space required is determined by the apparatus rather than by the number of students.

In laboratories students usually work in groups and it is preferable that they should have the theoretical background to an experiment before doing the practical work. This can be achieved by having as many pieces of apparatus as there are groups, and having laboratories big enough to cope with a whole class at once. This is an obviously expensive arrangement and where large and complex apparatus is involved experiments often have to be carried out before the theoretical work has been done.

Consideration should be given to the co-ordination of the programmes of laboratory work so that expensive equipment is used to the maximum extent. For example, a training workshop in one college might be used for practical work by students from other colleges.

Staff Offices and Private Study Rooms

The last type of accommodation to which I wish to refer is the small rooms. In many technical colleges the teaching staff share a departmental staff common room; each member of the teaching staff does not have his own room. In universities the view is strongly held that each member of the academic staff should have his own room, although present overcrowding often makes this impossible. If the student/staff ratio is between 10 and 20, it is likely that some 50 small rooms will be required in one college, enough to require special consideration in design.

Proportion of different types of accommodation

Using schedules of accommodation prepared for separate engineering departments in a university as a guide to the future requirements in colleges of advanced technology, the proportions of different types of accommodation are approximately as given in Table I.

In science departments the percentages of rooms 12 ft. and 20 ft. high might be reversed, i.e. 51 per cent of rooms 12 ft. high and 34 per cent of rooms 20 ft. high. Sub-departments usually require each type of accommodation such as staff offices, class-rooms and laboratories, to be grouped together or arranged to provide easy intercommunication.

The large, high laboratories are at ground level and, as most new building will

TABLE I

Description	*Percentage of total accommodation*
1. Lecture theatres and rooms. (One lecture theatre for, say, 300 or 400 students at 10 sq. ft. per student, and lecture rooms for up to 60 or 70 at 11 sq. ft. per student. Lecture rooms up to 1,000 sq. ft.)	6%
2. Drawing office/class-room (Multi-purpose rooms for 60 to 70 students at 30 sq. ft. per student. Rooms up to 2,000 sq. ft. in area and, say, 12 ft. high.)	14%
3. Light laboratories. (Up to about 1,000 sq. ft. in area and, say, 12 ft. high.	20%
4. Heavy laboratories and workshops. (Usually greater than 2,000 sq. ft. in area and up to 20 ft. high.)	51%
5. Staff offices and small rooms. (100 to 300 sq. ft. and, say, 8 ft. high.)	9%

be in towns on restricted sites, the roof of these laboratories at first-floor level could be designed as a valuable open amenity space. The class-rooms, drawing offices and smaller laboratories in a five-storey block are connected to the office block by the main vertical circulation, enabling different floor heights to be used and integrated within the same overall building envelope. In this way floor heights and circulation are easily related to the requirements producing an efficient three-dimensional scheme.

This may be an over-simplification of the problem but I am trying to bring out the point that there are three broad types of accommodation in a building designed for the teaching of technology and to plead with architects not to iron out the different requirements of each type and squeeze all the accommodation into a uniform rectangular building of approximately equal floor heights so that the high ceilings are too low and the low ceilings too high.

An important point that the architect should try to get over to his client from the first meeting, is that when the building is first used it will be three years old. Bright new ideas after the contract is let inevitably mean increased cost.

The architect may obtain much guidance from a building bulletin but his detailed brief is peculiar to the college. The brief should preferably be provided by two groups, the first comprising principal and heads of departments, the second comprising those in charge of laboratories including the senior technicians without whom most laboratories would cease to function.

It must be admitted that many brilliant academic men who will be briefing architects of their requirements in a laboratory will lack the sense of proportion possessed by the best architects. They will be enthusiasts who maintain that their work is quite the most important and cannot be bound by any limits of expenditure imposed by the University Grants Committee or Ministry of Education. This attitude can sometimes be dealt with by arranging that the enthusiasts' brief is discussed at a meeting of enthusiasts from different departments. Overall limits of space or cost are present in most schemes and if the enthusiasts have to vie with each other for laboratory space there is some hope of a reasonable solution. It is more difficult for an architect to tell the technologist client he is talking nonsense than it is for another technologist to do so.

On the other hand the architect should respect the scientist's and technologist's views on his technical proposals. It is not good enough just to take a fashionable proprietary article off the shelf, dust it and assume it will be satisfactory. Too many clients are now paying the heavy price of maintenance and inconvenience caused by the architect using unsuitable materials or systems in his building. It is possible that the scientist and technologist in his own field could make a useful contribution to the architect's knowledge in such matters.

In view of the instructions concerning fixed-price tendering and the emphasis on pre-planning, it is essential that all details necessary to the completion of the building should be agreed before the contract is let. This means that the client must spend considerable time briefing the architect and, as most academic staff are already very fully occupied, it is most important that colleges engaged in any major new project should employ a technically qualified planning officer to liaise between the architect and college. His duties would include sitting in at all briefing meetings and interpreting the client's brief to the architect, knowing the appropriate Ministry of Education or University Grants Committee standards and being familiar with the requirements of authorities controlling this type of public expenditure. Being in constant touch with the requirements of the college, the planning officer is able to provide an essential link between architects having little technological knowledge, and technologists having little knowledge of architectural techniques.

The University Teaching Laboratory

E. MAXWELL FRY, C.B.E. [*F*]:

Sir Eric Ashby has stated two practical problems. The first concerns the meagre use to which laboratory space is normally put and the waste of capital and income involved; the second concerns the need for unpredictable expansion beyond the limits of a defined programme of building.

The first responds to the degree of pressure to be imposed; show us the pressure and an answer can be given in its own terms. Single purpose laboratories, like my own sitting room, are more useful and pleasant for their occupants than a bed-sitter would be for me, but if the pressure demands it then they can be designed at the additional expense that one would expect. The problem requires to be stated in those terms, as in terms not unlike them the building of camps was solved after the first year of the last war.

But I should be sorry to think that this programme of building could be contemplated so because it would vitiate the essential purpose for which universities exist.

I agree that a university is a society of people, but it is a society of people with a purpose, and such a society when it comes to build wishes to express its purpose as clearly as the Church wished to in the Middle Ages. I suggest that this purpose is to safeguard and to promote civilisation and if this is agreed, then the contribution of the architect is distinguishable only in degree from that of the scientist.

I could, therefore, not agree that our function as architects is merely to provide a convenient and lasting shelter for university scientists. Offered me in such terms, I would decline the commission and look elsewhere for more purposeful clients.

I cannot see how we can work together with any hope of ultimate value to the community until we, the architects, belong to the same group that promotes the work we design.

These differences lie exposed in his complaint that we design so closely, we are so eager to build perfect monuments to our own glory that we leave the scientist no room in which to exercise his liberty to be a law unto himself. What he said, in fact, was that whatever elegant structures we might put in the front to house the more permanent elements, the back should be given over to erections of a short span of life and to space in which to improvise; that science buildings should live a divided life for ever.

Le Corbusier once said that a good programme, well understood, is an architectural battle half won, and there is a special reason why the programme, which is no more than the clients' requirements for building set out in the clearest way possible and amplified in discussion, should leave few matters in doubt, and should presume some knowledge of architecture into the bargain. It is this.

Unlike science in general, architecture deals in unities and creates by intuition. It is essentially the nature of the architectural process to grasp the assemblage of facts and data with which it has to deal into the coherence of an idea, or if you like it, an inspiration, and this is true of quite complex problems as of simple ones, since many a problem lies maturing in an architect's mind long before the occasion to solve it in concrete terms arises.

What distinguishes architecture from mere building is feeling; what gives architecture its importance to society is its ability to fertilise the soul through the reference to permanent values arising from present environment; and since it is clear that the process takes place as a personal experience, everything possible should be done to ensure that the critical moment of creation is propitious. In America, where labour is costly, the materials, tools and machines lie ready to its hand. In England, when we seek architectural talent, we must study how to secure that its inspiration is touched off with all the relevant information ready for it, for at this moment, everything is considered together in the considerable emotional stress that gives intuition its superiority over reason and deduction. But it is preceded by the amount of common-sense reasoning necessary for the understanding of the programme and some broad deductions from it.

A programme, therefore, should not only set down the areas of the various rooms and the number of their occupants, but how they are expected to function, the traffic to and through them, their services, their possible extensions, their behaviour under stress, their part in some larger organisation. Quite early in the architect's interpretation of them, they turn into a rigid structure because of the necessity of fixing the circulations in the form of passages and corridors, which come to immovable junctions and terminals at staircases, lifts, entrances, boiler-houses and the like. Some

parts may be flexible, some parts expandable or alternatively divisible, but as such parts will cost more, their extent must be defined and they join, of course, with parts less flexible.

The struggle to work out an architecture to fit more closely the facts of contemporary life makes us more sympathetic to the idea of process and, I believe, better able to serve you than in times past.

This revolution in architecture is based on the study of function, the acceptance of industrialism as material for art and the service of society as a working faith. It could not hope to do other than work from the inside outwards and to use the hard and irrefutable facts as we find them.

What we both seek is value, considered at its lower levels in terms of efficiency and at its higher in terms of feeling. There is a great deal of pleasure to be got from the exercise of ingenuity on the lower plane and a considerable part of the time of the profession is spent upon investigating and testing and comparing the inexhaustible supply of technical data that forms the matrix of the larger works.

The lower plane value can be measured in terms of performance, cost, durability and maintenance; it can be analysed, codified and standardised, but it must be remembered that, though information is gold and economy is another word for a true proportion in things, the process of analysis is opposed to the creative process. Pushed too far, it leads to parsimony, which is out of proportion and depresses the spirits of all but the financial pundits whose spirits are necessarily on the low side, and tends to stifle the emergence of the higher values which, I continue to insist, are those which we both seek.

These higher values can be measured only by the feeling of a higher intensity of living which they generate, just as in Brazil the work of a group of enthusiastic architects and clients—and it needs, of course, both, before architecture arises—put new heart into that country and lifted it at once to a position of respectful consideration among nations.

I look forward to the day when, as in the Middle Ages, the combined talent of clients, architects and artists of all kinds are poured into a programme of the kind we are discussing. At the moment, the entry of artists, other than architects, is debarred by the quite blind excision of the small sums of money involved.

Industry, which was once the villain of the piece, becomes every year a more enlightened patron and it is to industry that we must perhaps turn for the fuller acceptance of the millenium we have already entered.

But it is the universities that should lead the way in replacing the stigma of 'red brick' with a new idea of beauty incorporate moving into the 'clean revolution'. It is an inspiring opportunity for which we should both educate ourselves with awakened sensibilities, our aim neither mere efficiency, nor fear of Russia, nor emulation of America, but civilisation in the liveliest and loveliest terms in which we can imagine it.

Science Buildings in Colleges of Technology

G. GRENFELL BAINES, A.M.T.P.I. [*A*]:

Just as many a good Act of Parliament mirrors the evils that have gone before, so many a building is likely to reflect the purposes and prejudices, the capacities and incapacities of those who were partners at its conception.

This is no mere opening gambit, nor is it intended to create a smoke cloud behind which to hide when the air is thick with flying responsibilities. It may be more comfortable to say 'we have failed' than 'I have failed', but that is not the reason why designers need their client partners. Fees apart, they need them for the simple reason that the sharpest inspiration, the best ideas, emerge from the deepest possible knowledge of the purpose of a building and who should know that better than our clients?

Before examining the design implications of Dr. Sparkes' paper a reference to the nature of design may help. Design is largely a comprehensive thinking process leading to a comprehensive solution of all the relevant factors of a problem. The degree to which this thinking process may be invested with the feeling necessary to ensure a solution of grace may vary, but in architecture the need is high.

Providing they discharge their primary responsibilities of designing for function within the economic restraints, architects need have no uneasy conscience about investing time and thought in grace.

Without making a mystique of design it is necessary to understand its comprehensive nature. The chief factors involved are few: purpose; structure; economics; beauty. To reach a solution where all the positive qualities of these may be found in balance should be every designer's aim. Balance is imperative and though bias may infuse character it must be remembered that the slightest excess may turn character into caricature.

While the successful design may be a balance of all the positive elements of the factors involved it would be idle to pretend that many times first examinations of individual factors reveal wide gaps and apparently conflicting demands. On the other hand it would be fatal to regard the design process as a continual compromise. The designer's and the client's attitude should be 'what good ideas are there to be found in these gaps' not 'by what ubiquitous formula may they be by-passed'. In other words a 'whole' approach to a whole solution.

Dr. Sparkes makes it clear that as the technical education course advances specialisation takes place and this leads to working in small groups. Greater emphasis is given to the individual which applies to staff as well—something like 50 small separate rooms being suggested for a college with about 500 students. This implies that the more advanced the teaching, the more small cells the building must provide; small cells lend themselves to building up, larger spaces don't as a rule. But this is purely from the convenience of space arrangement viewpoint. The thesis must be examined from the angles of relationships, services, economics and so on. Thus very soon, and quite briefly we have entered into the design process.

In our office we have seen this process working in three stages:

(i) Basic space arrangement by department relationships;

(ii) Room space shapes and relationships within departments;

(iii) Detail layout of equipment and services.

Associated with all three stages is a threefold procedure:

(*a*) obtain requirements;

(*b*) retranslate and discuss requirements by schedule text and diagrams;

(*c*) draw up the outline building design.

At all stages it is important to know about *all* the people using the departments and the building, and what they *do*. To discover this we find it best to start with summit meetings when the principal, sometimes with, sometimes without his heads of departments, is asked the basic questions and told of our method of working. Generally speaking the fewer the people who are concerned with the basic conception, the better. Design is very much an individual matter, it cannot be improved much and certainly cannot be speeded by multiplying bodies. Quite soon, however, we are down to heads of departments, teachers and operator levels.

Believing it is better to see first in the mind rather than the eye we avoid producing or distributing too many drawings at the early stages. Thus the design remains fluid in thought.

Properly conducted this operation should lead to a balanced and comprehensive statement of needs which almost automatically leads to a balanced and, one would hope, fine design.

Architects are interested in shape not only for looks but in doing the job. Very soon they must know is the room better long and narrow, square, or does it matter? Is a ground-floor location imperative? Or (for every science teacher seems to think of his as a field operation at one level) may rooms be on upper floors? What layout of benches and fume cupboards do you consider best for your job? Parallel with windows or at right angles? We ask this question because functionally it is a matter of light and work. Benches facing the light give ideal conditions for examining the interiors of containers. At right angles the light throws up forms, at right angles it may be easier for students to look up to a blackboard wall.

Technically the layout of benches can directly affect the layout of services which in turn can affect choice of structure to accommodate services conveniently and

gracefully. This finally can affect the whole appearance and character of the building, demonstrating the ebb and flow and comprehensive nature of the design processes.

So many services are required in some laboratory buildings, for example the Process Block at the National College of Food Technology provides nine separate services, that the designer's whole approach to a fundamental matter like windows must change. Wall space in laboratories seems to be so valuable that pressure of the functional and technical factors could eliminate windows. The designer must then decide whether the humanities would suffer and the architecture should be determined by the plumbing, for obviously buildings without windows would possess an unusual expression.

Apart from questions of general appearance of the building there are sound functional reasons for running all services above floor level, either on racks free of or integral with benches or above bench-top level; this system works best with perimeter and peninsula bench layouts; immediately island benches become necessary then new thought on services inevitably leads back through structure to appearance.

Thus do usefulness, firmness and beauty, interact in the flow of the design process.

In tall blocks we have concluded there is much to be said for core planning, that is a continuous perimeter of working space round a central core of stairs, lifts, lavatories and service ducts. The core is so placed that varying widths of space are left on all sides to offer varying room sizes. The general planning advantages—maximum light to working spaces; concentration of services; economy in proportion of circulation to working space—must then be examined against any possible functional disadvantages, such as fume cupboards away from windows. So far we have not found any serious disadvantages to the core plan, but obviously it is the architect's job to take himself and his client partner through these tests time and time again until the design is proved sound.

A more general matter which haunts the exchanges between client and architect, befogging their thinking and bedevilling their relations, is the omniflexibility myth. More time and money are wasted on this than most aspects of building today. Foresight is necessary but like other good things it is bad when over-emphasis throws the design out of balance.

Building for out-and-out flexibility is expensive and where immovable cost-ceilings exist, overspending on flexibility can mean inferior finishes in vital places.

Obviously basic structures should be designed so that fundamental elements such as floors, stairs and roofs will remain erect when some internal wall is moved. Obviously an exhaustive survey should be made into the frequency of past changes when assessing the importance of this factor. We invariably find that, where elaborate and expensive provisions have been made for removable walls, ceilings and even floors, in practice little use is made of them. The omniflexibility myth has its uses. Uncertain clients may use it as a superior and frightening watch-dog to guard them from all too curious architects. On the other hand it can be a convenient genie for the lazy designer.

Perhaps the best tool for tightening the screws of logic in matters such as this is the cost plan. Designers and clients are daily discovering the value of cost control by analysis, a technique evolved by the Ministry of Education Chief Quantity Surveyor and described in Bulletin 4.

A cost plan is a statistical sketch plan which shows by analysis where the money is being spent. It is as useful as the traditional sketch plan and can be just as expressive of good or ill proportion in the design. Cost planning and cost control by analysis is a separate subject on which work is going on and much data already published.

I will only mention one aspect of it in designing technical colleges. We have seen that just as building design is a visual expression of the teaching design, so can a cost plan be a statistical reflection of the teaching. It is very misleading to compare overall prices per square foot of different technical colleges and just as misleading to compare single items in a number of cost analyses. Comparison by groups of items is more helpful and we have found that while those items going to make the 'habitable shell' that is all work above ground comprising structural frame (or walls), floors, roofs and outer walls, windows and doors, do build up into a comparable group, equipment and engineering services will vary enormously with individual teaching designs. Even partitions should be regarded as part of the teaching design. The difficulty of controlling costs over a national programme are thus exposed and it is hoped that with the greater use of the cost planning technique by designers and clients the Government will be persuaded to treat every college on its teaching needs and make comparisons only where comparisons may fairly be made.

The rapid adoption of cost control methods does in a way underline the designer's appreciation of the importance of 'requirements' which brings me to a final comment on Dr. Sparkes' paper—his interesting suggestion that there should be a planning officer to link the designer and the college. As specialisation continues to develop so does the function of the 'link-man' increase in importance. Some design organisations, our own included, have recognised this and strengthened their contacts with specialists in engineering and cost by appointing fully qualified people with status up to partner level—such all-in design organisations already exist in large official practices and they set the pattern of development for private practices, as well as perhaps providing the answer to the all-in service now being offered by large-scale building organisations. But a link-man between client and architect could be a valuable member of the design team.

Whether the extremes of knowledge and experience required could be found in one man, and whether, were he to be an architect, he could control the itch to interfere in matters of opinion on design must be regarded as operational risks. But were an architect to encounter such a really knowledgeable and balanced collaborator he might feel disposed to regard him as a consultant and in accordance with R.I.B.A. Conditions of Engagement be prepared to review the Scale of Fees. This already occurs to some extent on large-scale projects for local authorities—it is definitely not a question of fee-cutting but responsibility sharing and on that collaborative note I will conclude.

Materials and Services

W. H. PRITCHARD, Courtaulds Ltd.:

In 20 minutes one cannot do more than touch upon a few points and mention some problems. The objective is to stimulate discussion and therefore in mentioning materials or methods I intend to select one or two examples of good practice and avoid qualifying the statements with a list of other methods or materials that can be used and may be equally or nearly as good. This rather ruthless method has its risks and limitations and no doubt these will become apparent in the discussion. On the whole in Europe we tend to be conservative about services and materials used in laboratories and I suggest that there should be a much more critical appraisal of both when the laboratory is being designed. The strict observance of two rules will occasion a lot of thinking and collecting of data but ultimately will both save money and provide an efficient laboratory. The two simple rules are:

(i) No centrally-distributed service should be installed unless there is an overwhelming case for it;

(ii) No material should be used for laboratory finishes, furniture and fittings without careful examination of properly expressed data regarding its chemical composition, physical properties, and performance under conditions strictly comparable to those envisaged.

Attainment of these ideals demands, firstly, very close collaboration between the architect and the potential user and, secondly, extensive examination of technical literature and consultation with the makers of various products. Admittedly the task is complicated by the fact that architects and scientists tend to speak different languages, both literally and metaphorically, but this can often be overcome by finding a third person, knowledgeable in both fields, to act as interpreter.

[*Note:* Mr. Pritchard's paper, in principle, was divided into two sections, 'Services'

and 'Materials'. Since it is not possible to reproduce the whole of his paper here, the section on 'Services', which he spoke on first, has had to be omitted. Mr. Pritchard continued:]

An efficient system of services is important but a convenient working surface or bench-top is essential. Broadly it is required to be mechanically strong, resistant to attack by most laboratory reagents, withstand a moderate amount of heat without distortion, and it must not split or crack over a lifetime of hard wear. In this country the only material available that entirely fulfils *all* these requirements is genuine teak, *Tectona Grandis*. There are substitutes, both timbers and a range of other materials, but I think we must accept the fact that they are substitutes for teak and while they may be useful for specific applications they do not rival with teak for all-round performance. Among timbers the best substitutes are probably Iroko, and Afrormosia. Both are considerably less costly than teak. Very briefly the practical limitations appear to be that Iroko tends to have irregular grain, and thus variable performance, and Afrormosia stains readily, particularly with iron salts. If first cost is weighed against the expectation of life of the bench the slight extra expenditure incurred by using teak for the bench-top will be fully justified.

The popular bench-top material used in North America provides a striking contrast. It is a soapstone quarried in Albermarle, Virginia, and it is marketed under the trade name of 'Alberene'. The stone has a dense fine structure (not laminated), it is easily worked and does not split or chip. It appears to resist attack by all normal laboratory reagents and as the fusion point is well above 2,000° F. its ability to withstand thermal shock is outstandingly good. Two varieties of the stone are used for laboratory applications. Both types of the stone are silicates and the differences are petrological rather than chemical. The general chemical composition is shown in the table below.

Chemical Composition of Soapstone from Albermarle

	%
Silicon, estimated as the oxide	37·20
Magnesium, estimated as the oxide	26·95
Aluminium, estimated as the oxide	8·40
Iron, estimated as the oxide	11·15
Calcium, estimated as the oxide	4·60
Titanium and miscellaneous	0·50
High temperature loss	11·20

The material is so widely used in American laboratories that at one time I thought it would be interesting to construct a few trial benches here of either Alberene or a similar stone. The weight of Alberene, 185 lb. per cu. ft., did not make trans-Atlantic shipment attractive and I made numerous inquiries for stone of similar properties in this country. So far I have not been able to trace one that is marketed. Soapstone or a material of strictly comparable properties is attractive, not only as a bench-top material but also as one that permits easy fabrication of the very desirable dished fume cupboard working surface. The advantages of the shallow dish arrangement are so readily apparent that they do not need elaboration.

That is the ideal arrangement and material for a fume cupboard working surface and I think that the only thing we can do is to get as close to it as possible with the materials that are readily available here. Fortunately for fume cupboard backs and glazing we are in a much better position as there is ample supply in this country. For the backs of fume cupboards asbestos-cement sheet coated with epoxy resin paint provides an inexpensive and durable material. The combination is highly resistant to both chemical attack and thermal shock and as the epoxy resin paint can easily be washed down the objections to a grimy, stained, asbestos surface are eliminated.

With a growth of awareness of the need for laboratory safety there has developed a trend to glaze fume cupboards with Georgian wired glass as a method of reducing risk from flying splinters. The intention is admirable but the thermal properties of wired glass are poor and glazing tends to crack with what may fairly be regarded as quite normal use of the fume cupboard. By normal commercial toughening processes the surface compressive strength of glass can be permanently increased to about four times its breaking tensile strength. This enables the glass to flex without cracking and provides high resistance to thermal shock. Some idea of relative thermal properties can be obtained by taking as an example a piece of wired glass at 40° C. and pouring cold water on to it—fracture may be expected. The same experiment repeated with toughened glass at 200° C. would probably leave the material unaffected. Toughened glass is only slightly more expensive than the wired variety and as it is improbable that it will break under anything like normal conditions the absence of replacement costs must be offset against the increased first cost.

Finally, I suggest that we should just note a new material that may solve many laboratory problems in the future—polytetrafluoroethylene. This is one of the newer plastics, somewhat similar in appearance to polythene. It is highly resistant to chemical attack, except by fluorine and molten alkali metals, and can be used up to temperatures within the range 270° C.–300° C. At present it is rather costly but there are indications that within a few years increased production will bring this new and interesting material into the realm of everyday practical propositions. I am sure you will agree that in all aspects of laboratory design it is not sufficient just to be up to date; we must also be aware of probable future developments and make our laboratories interesting and stimulating places.

The full illustrated report of the Symposium, including all the papers in full and the discussion, is being published and will be obtainable from the R.I.B.A. (price 7*s.* 6*d.*). An announcement will be made in the JOURNAL when it is ready.

Practice Notes

Edited by Charles Woodward [*A*]

IN PARLIAMENT. Planning Appeals: Inspectors' Reports. Mr. A. J. Irvine asked the Minister of Housing and Local Government and Minister for Welsh Affairs when he expected to make available to the parties to appeals, made to him under section 16 of the Town and Country Planning Act, 1947, the report of his inspector who held the relevant public local inquiry.

Mr. H. Brooke: I am in the process of consulting the local authority associations on the terms of a circular to local authorities dealing with this and other points arising from the report of the Franks Committee. I hope that I shall be able to issue the circular later this month. Arrangements for making available copies of inspectors' reports in planning appeals will apply in respect of inquiries held at any time after the issue of the circular.

Mr. Irvine: I am obliged for that answer, but is it not the case that in November it was stated in another place that the Government hope to put these changes into operation during the course of January? Will the right hon. Gentleman give an undertaking that he will expedite this matter as far as he can?

Mr. Brooke: I am anxious to expedite this matter. At the same time, the local authorities are closely concerned, and the hon. Gentleman will agree that it is right for me to consult the local authority associations to get their views before actually issuing a circular. (11 February 1958.)

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Administrative Tribunals. Circular 9/58 dated 27 February addressed to local authorities in England and Wales states that the Government have accepted many of the recommendations of the Committee on Administrative Tribunals and Inquiries, and the Circular sets out those changes in administrative procedure which can be made without legislation. They are:

(*a*) Inquiries held on behalf of the Minister of Housing and Local Government in respect of the compulsory purchase of land; (*b*) clearance orders under the Housing Act, 1957; and (*c*) cases arising under Part III of the Town and Country Planning Act, 1947. Civil Servants will attend inquiries to give evidence where a Government department has expressed positive views which form part of the local authority's case. They will be liable to cross-examination on questions of fact and expert opinion, but not on questions of Ministerial policy.

Under (*a*) the local authority should prepare a written statement setting out clearly the reasons for its proposals which should be available to those affected as early as possible so that they can prepare and present their case.

Under (*b*) the Housing Act, 1957, requires the local authority to serve on any objector the main grounds upon which

unfitness of the house is alleged. This written statement should also deal in general terms with the condition of the unfit houses in the clearance orders.

Under (*c*) the General Development Order, 1950, Article 5, the local planning authority must state its reasons in writing for refusal of an application or a permission subject to conditions. The reasons should give the applicant adequate understanding of the reasons for the decision. It is not sufficient merely to say the development 'would be injurious to amenity' or would 'be contrary to the provisions of the Development Plan.'

Where an applicant lodges an appeal and desires to be heard, amplification of the planning authority's reasons may be necessary, if, for example, a Ministerial statement of policy or a Departmental Circular has been taken into account. A full statement should be furnished where the inquiry is in respect of failure to issue a decision within the statutory period. A copy of any statements furnished to the appellant should be sent to the Ministry.

Much time might be saved if planning authorities would authorise its officers to explain to applicants the reasons why particular proposals are not acceptable.

Where a planning application is referred to the Minister under Section 15 of the Act, any reasons given should be served on the applicant for guidance in presenting his case.

In future the Minister's decision in an appeal will state the Inspector's findings and his recommendations (if any) and then give the Minister's decision with reasons. If the Minister does not accept the Inspector's recommendations the decision will say why, and the recipient of the decision may obtain a copy of the Inspector's report if asked for within one month of the date of the letter giving the decision.

Costs of the parties to an appeal will not normally be awarded except against a party who has asked unreasonably.

The Government agree that three characteristics should mark these administrative procedures, namely, openness, fairness and impartiality.

The Circular can be obtained at H.M.S.O., price 4*d.* net.

MINISTRY OF POWER. Thermal Insulation of Industrial Buildings. Proposals for Regulations. Proposals for regulations to be made under the Thermal Insulation (Industrial Buildings) Act, 1957, are contained in a memorandum which has been circulated to organisations interested in the subject by the Ministry of Power.

The main purpose of the Act, which became law in July 1957, is to prevent the unnecessary waste of fuel that occurs as a result of inadequately insulated buildings. The Act applies only to new factories started on or after 1 January 1959, unless the Minister of Power appoints an earlier date, but it is hoped that the insulation of these buildings will encourage the owners of existing factories, commercial buildings and houses to follow suit.

The Act itself does not lay down any standard of insulation but provides for the Minister to make regulations prescribing a standard and dealing with other related matters.

During the passage of the Bill through Parliament, the Minister undertook to consult organisations who might have an interest in the effect of the Regulations, before he reached a final decision on their contents.

This consultation is now taking place and proposals for the contents of the Regulations have been summarised in a memorandum, on which interested organisations are being asked to comment. As it is important that the Regulations should be made at the earliest possible date to ensure that intending builders are aware of their obligations under the Act, it will not be possible to consult individual firms, but the large number of organisations who are being consulted should ensure full representation of the various interests involved.

No decision on the Regulations will be taken until the comments of interested organisations have been fully considered, and it is important that builders should not assume that the requirements under the Act will necessarily be those described in the memorandum.

ROYAL COMMISSION ON LOCAL GOVERNMENT IN GREATER LONDON. The Royal Commission on Local Government in Greater London have written to all the local authorities in the area, explaining how the Commission propose to begin their investigations and inviting the local authorities to submit evidence. The letter states that the Commission wish first of all to see how the present arrangements are working in some of the main local authority functions such as education, environmental health services, housing, personal health and welfare services, town and country planning, and traffic.

The Commission are also prepared to receive evidence from members of the public. Any person who wishes to do so should send his evidence in writing to the Secretary of the Commission (Mr. J. R. Niven) at Sanctuary Buildings, 16 Great Smith Street, London, S.W.1.

CLEAN AIR ACT, 1956. Circular 6/58 dated 7 February addressed by the Ministry of Housing and Local Government to local authorities in England and Wales, states that 1 June 1958 is the appointed day for the operation of all those provisions of the Act which are not already in force. Such provisions prohibit the emission of dark smoke from chimneys, the discharge of grit and dirt from furnaces, and new powers for dealing with smoke nuisances.

Local authorities should provide publicity and information in their areas about the requirements of the Act.

The Minister hopes that the Model Building By-law issued with Circular 64/56 will be adopted by urban authorities who have not already done so. The by-law facilitates smoke abatement in the future by securing that domestic appliances in buildings from now on are of types which can be operated without smoke. This is important in places which may be declared smoke control areas later on. The Act provides that no grant is payable for the conversion of fire-places in smoke control areas in the case of dwellings erected after 5 July 1956. The by-law would help to ensure that conversion is unnecessary in such cases.

The Circular is obtainable at H.M.S.O., price 4*d.* net.

PLANNING APPEAL. Use of Dwelling-house as Offices. In this case the Minister dismissed an appeal from the local planning authority's refusal to grant planning permission for the use of four rooms in a detached 14-roomed Victorian house as architect's offices. The house stands in grounds of about one acre in a tree-lined residential road.

The architect (the applicant) lives in the house and desires to set up practice in his home with a staff of six draughtsmen. With the exception of a small name-plate the appearance of the house would remain unchanged. The house is too large for the architect's occupation and does not lend itself to conversion into flats. Other properties in the road had been converted into an old people's home, a social club and a guest house, and doctors and dentists were practising in the neighbourhood.

The local planning authority's reasons for refusal were that the change of use of the four rooms was detrimental to the houses in the vicinity and lowered the property values in the road. The business could not be regarded as a local professional use incidental to residential occupation, as in the case of a doctor or dentist. There was ample provision for offices in the business area in the town, but there was still an acute housing shortage, and if the property was no longer wanted as a single family residence it could be converted into flats.

The Minister agreed that the use in question was not comparable with professional use by a local doctor or dentist serving the residential locality in which his surgery is situated, and that it was inappropriate in this pleasant residential area. He accordingly dismissed the appeal. (JOURNAL OF PLANNING AND PROPERTY LAW, February 1958.)

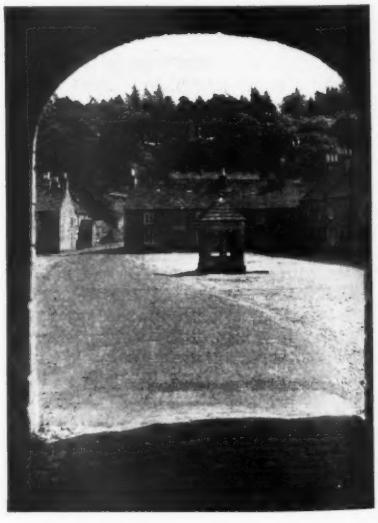
S. R. P.

[*Photo: Aerofilms Ltd.*

Blanchland. One of the Newcastle Conference tours arranged for 16 May is to Blanchland which came into the possession of the Crewe trustees in 1752 when it was planned as a model village

The Northern Architectural Association, 1858–1958

A Brief Note on the History of the Host Society for the British Architects' Conference, 1958



THE NORTHERN ARCHITECTURAL ASSOCIATION was formed in 1858 by 27 architects practising in Newcastle, Sunderland, Durham, Darlington, North Shields, South Shields and Alnwick. The formation of the association was the result of a meeting of protest against the unfair conditions imposed in connection with an architectural competition for a mechanics institute at South Shields. The principles of the association formulated by the founder members were the promotion of union among architects, the elevation of the profession, uniformity of practice and the general advancement of the art and science of architecture. In 1858 a few similar provincial societies existed but of these societies the N.A.A. has been one of the few to preserve its name and character and can rightly claim to be one of the senior provincial societies allied to the R.I.B.A.

The first President was John Dobson who held office until his death in 1865. Dobson was the architect mainly responsible for the development of Newcastle in the 19th century. He was born in North Shields in 1787 and after completing his studies under Bonniface Moss set up in practice in London. He returned to Newcastle in 1810 and established himself as an architect. At this time he shared with Ignatius Bonomi of Durham the distinction of being one of the two truly professional architects between York and Edinburgh.

Blanchland, Northumberland

[*Photos: Edwin Smith*

At the time of the completion of his apprenticeship in 1809 his contemporaries were more or less associated with the building industry. Dobson's principal project was the central development scheme for Newcastle. Towards this end he found as collaborator Richard Grainger — a builder of genius, with tremendous enterprise and initiative. Between them they were responsible for Grey Street, Market Street, Nun Street, Nelson Street, Hood Street and Grainger Street. Grainger was elected an honorary member of the association in 1861. Dobson's other works included St. Thomas's Church, the Central Arcade and the Doric structure of Central Station.

The first meetings of the N.A.A. were held quarterly in the Keep of the Castle, which was lent for these occasions to the N.A.A. by the Newcastle Society of Antiquaries.

The proposal to form an alliance of the provincial societies emanated from the

[*Photo: Edwin Smith*

One of the whole-day Conference tours will be to the Northumbrian castles of Alnwick and Warkworth. The photograph shows the Barbican (*c.* 1310–15) of Alnwick which is owned by His Grace the Duke of Northumberland who is a vice-president of the Conference

N.A.A. in 1860, and it drafted a scheme upon which the 'architectural alliance' as it was eventually called was formed. It consisted of nine societies, one in London, two in Scotland and six in England. When the alliance eventually ceased to exist it had been replaced by the wider alliance which now exists between the provincial societies and the Royal Institute of British Architects. In 1861 the N.A.A. formulated what is believed to be the first Scale of Professional Charges, which was eventually modified as the recognised scale of the profession.

The association showed signs of languishing in the 1880's but on the appointment of Frank West Rich as secretary in 1884 the N.A.A. became re-vitalised, more frequent meetings were held, the library was formed, and a system of prizes for the encouragement of students was inaugurated. In about 1887 a Bill for the Registration of Architects was introduced into Parliament, and received the whole-hearted support of the N.A.A., although the association regretted that the move was not sponsored by the R.I.B.A. These differences with the R.I.B.A. must have been resolved because the N.A.A. was one of the first provincial societies to enter into association with the R.I.B.A. in 1889. The President at that time—E. J. Hansom—was elected on to the R.I.B.A. Council. In Council, Hansom presented a strong resolution to the R.I.B.A. regretting the dilatory attitude of the R.I.B.A. towards the Registration Act, and in a report dated March 1891 the N.A.A. 'deplored' the action of the R.I.B.A. in opposing the progress of the architectural movement towards registration.

The R.I.B.A. paid its first official visit to Newcastle, on the invitation of the N.A.A., in October 1905, and the proceedings over the three-day visit followed very much the same lines as the current R.I.B.A. conferences.

The second official visit of the R.I.B.A. to Newcastle took place in 1925, when the N.A.A. had the honour of acting as host for the R.I.B.A. annual conference. The subject of the conference was 'The Architect and the Public', and the principal speaker was Sir Theodore Morison. The programme included a trip down the River Tyne to Tynemouth Priory and a visit to Durham Cathedral and Castle, as well as the conference banquet in the old Assembly Rooms and a civic reception in the Banqueting Hall in Jesmond Dene.

It is recorded as being 'a very successful conference'.

The alterations to the association's headquarters were made in 1937 and resulted in enlarging the meeting-room and library, and generally making the premises more convenient.

The war years, and the departure of many of its members into H.M. Forces rendered the N.A.A. temporarily inactive. The premises were taken over for war purposes.

Council meetings were still held amongst such members as were available, usually in the offices of Cackett, Burns Dick and Mackellar, who kindly lent their premises for any N.A.A. business over these war years. The immediate post-war years followed much the same pattern as those after the 1914–18 war, in that every effort was made by officials and members to reorganise the association and put it back into working order. The tremendous influx of ex-Service students into the School of Architecture resulted in a consequently large increase in student membership in the association, and the N.A.A. rooms in these post-war years were used extensively by students as a place for research and study.

In 1948 the R.I.B.A. Bronze Medal for the Northern Architectural Association was instituted, to be awarded every three years to a building of distinction erected within the association's area.

The work of the association increased to such a great extent that it became necessary to appoint a permanent secretary and W. G. Kinghorn, B.Sc., undertook the post in 1950. It is hoped that no successor need be found for him for many years to come.

Towards the establishment of a School of Architecture at Armstrong College (previously the Durham College of Science, and later Kings College in the University of Durham) the N.A.A. donated £500 from the income of the Glover Educational Fund and from private subscription sources, and further promised the sum of £50 per annum from the Glover Fund. The rise of the school from a part-time course within the Department of Fine Art to a Faculty within the University of Durham, fully recognised by the R.I.B.A. and the Registration Council, has been helped by the encouragement and assistance of the N.A.A., and the association has taken great pride in the liaison between the two bodies.

Review of Construction and Materials

This section gives technical and general information. The following bodies deal with specialised branches of research and will willingly answer inquiries.

The Director, The Building Research Station, Garston, near Watford, Herts. (*Garston* 4040).

The Officer-in-charge, The Building Research Station Scottish Laboratory, Thorntonhall, near Glasgow. (*Busby* 1171).

The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks. (*Princes Risborough* 101).

The Director, The British Standards Institution, 2 Park Street, London, W.1. (*Mayfair* 9000).

The Director, The Building Centre, 26 Store Street, Tottenham Court Road, London, W.C.1. (*Museum* 5400 (10 *lines*)).

The Director, The Scottish Building Centre, 425–7 Sauchiehall Street, Glasgow, C.2. (*Douglas* 0372).

Competition for Manufacturers' Trade and Technical Literature. For the second year running the R.I.B.A. and the Building Centre are jointly sponsoring this competition, the objects being (*a*) to recognise excellence in trade and technical literature intended for the architect; (*b*) to encourage manufacturers to increase the technical and informative content of their literature, and (*c*) to encourage manufacturers to conform to B.S. 1311 when producing trade and technical literature.

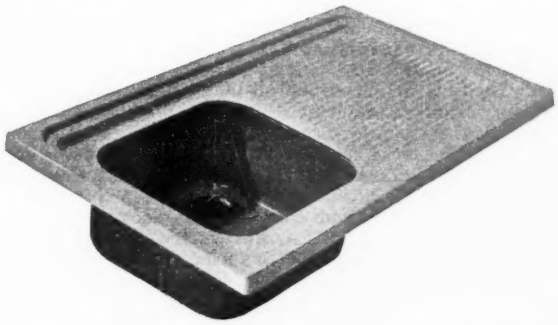
The competition is open to literature other than space and prestige advertising, which is directed to the architect. It may be produced by manufacturers or merchants of building materials and equipment, by associations of such manufacturers or by any other bodies connected with building.

Entries will be divided into two classes and each class will have its own awards. The classes will be as follows: Class (1), Literature which offers technical information on the use and application of a product, products or services of a single manufacturer; Class (2) Literature consisting mainly of technical information on design, methods of application, standards of workmanship, maintenance, etc., as applied to a class or group of products or services rather than to the products or services of a single manufacturer. The jury will make the final decision as to the class in which each entry will be judged.

The jury, nominated by the President, R.I.B.A., will consist of Mr. George Grenfell Baines [*A*], Sir Hugh Casson [*F*], Mr. Bruce Martin [*A*], Mr. E. D. Jefferiss Mathews [*F*], and Mr. Bryan Westwood [*F*].

All literature will first be judged on its general usefulness and appeal. If it is considered to be up to the standard required it will be accepted for inclusion in the Trade and Technical Literature files of the R.I.B.A. and will be recommended to Allied Societies of the R.I.B.A. and Schools of Architecture for inclusion in their libraries. Entries from this first selection will be judged a second time for further awards which will consist of: (i) one certificate of exceptional merit in each class, (ii) certificates of merit, (iii) honourable mentions. An exhibition of all entries will be held at the Building Centre.

There is one important alteration in the conditions for this year's competition; B.S. 1311 has just been amended and now includes certain of the continental 'A' series of sizes.



Application of Mastic Asphalt. The Natural Asphalte Mine-owners and Manufacturers Council has just published a composite booklet showing the three main uses of mastic asphalt in roofing, in tanking and damp-proof coursing, and in flooring. This booklet has anticipated the forthcoming issue of two new British Standards for tanking and damp-proof coursing and pending the issue of these two B.S. during the next few months, the references to asphaltic cement, namely: B.S. 1418, Table 1, Col. II; B.S. 1097, Table 1, Cols. 2 or 3, in the recommended form of specification contained in the Council's booklet should remain in line with their previous suggestions as follows: B.S. 1418, Table 2, Col. 2; B.S. 1097, Table 1, Col. (*b*).

The opportunity has been taken in this revision to clarify a few of the techniques illustrated in the diagrams, and it is hoped that this booklet will be of advantage to architects and to other users of mastic asphalt, as it gives diagrammatically most of the normal applications of mastic asphalt, as well as some technical information on points to which the user should have regard.

It is unfortunate and misleading to find on the inside cover a reproduction of the 'Certificate of Exceptional Merit' awarded for an entry in last year's Manufacturers' Trade and Technical Literature Competition, but which does not refer to this particular publication.

Copies of the booklet (and technical advice) are available free from the Council, 94–98 Petty France, London, S.W.1.

Display of Ceramic Glazed Wall and Floor Tiles. The Glazed and Floor Tile Manufacturers Association have recently recreated their exhibition unit at the Building Centre. It is claimed that the latest materials, colours and uses for ceramic wall and floor tiles are being displayed.

Home Lighting. A.E.I. Lamp and Lighting Co. Ltd. have copies available of an article from LIGHT AND LIGHTING by Mr. Derek Phillips [*A*] on an investigation into the relationship between architecture and lighting in the modern home. This is a very useful pamphlet covering lighting both in the house and in the garden, it is well illustrated and is obtainable from A.E.I. Lighting Department, 44 Fitzroy Road, London, N.W.1.

Nylon Sink Bowl and Drainer. This unit, which is illustrated on this page, is retailed at £16 10*s*. It is available in dual colours; cream, pastel blue, and lime green for drainers and grey for bowls or all white. The size of unit is 3 ft. 6 in. × 1 ft. 9 in. The number of advantages claimed are too numerous to list here but further information can be obtained from The Nylon Sink Co., Ltd., 46 Doughty Street, London, W.C.1.

British Standards Recently Published

B.S. 1265: 1958, **Engineers' pattern drawing boards;** B.S. 1266: 1958, **Engineers' pattern ebony edged tee-squares;** B.S. 1267: 1958, **Students' clamped drawing boards;** B.S. 1268: 1958, **Student's tee-squares.** Top grade Honduras pine and yellow mahogany are no longer available in the large quantities required for the commercial production of standard quality drawing boards and tee-squares. Hence the request by manufacturers for this revision of B.S. 1265/68: 1945, with its increased range of timbers whose suitability has been proven by experience gained during recent years.

Each standard in the new publication (19 pp., illustrated) specifies the *sizes*, *materials* and *constructional details* of the appropriate product. There is a specified moisture content for the wood used for the drawing boards and the ebony-edged tee-squares; and a detailed method for its determination is given in an appendix to B.S. 1265. The presentation of the illustrations has been considerably improved.

Approximate metric equivalents of the inch dimensions have been included for the convenience of readers.

Copies of this publication may be obtained from the British Standards Institution, Sales Branch, Park Street, London, W.1. Price 5*s*.

The R.I.B.A. representative on the committee was Mr. Richard Henniker [*F*].

An Account of the Activities of the I.U.A.

AS EARLY as 1867 an International Committee was set up on the initiative of the Société Centrale des Architectes to provide the basis of a regular international organisation for the architectural profession. This later changed its name to 'The International and Permanent Committee of Architects'. In 1932 M. Pierre Vago formed the organisation known as the 'Réunions Internationales d'Architectes' under the auspices of L'ARCHITECTURE D'AUJOURD'HUI. The international activities of this body were interrupted by the 1939–45 war, but as soon as the war was over the Central Committee met again and as a result of meetings held in September 1946 and May 1947, the International Union of Architects was founded.

A Congress at Lausanne, in June 1948, attended by delegates from 23 countries formally ratified the establishment of the I.U.A. with Auguste Perret elected as Président d'Honneur and Sir Patrick Abercrombie as President of the Union. M. Pierre Vago (Paris) was elected Secretary-General, a position which he has held continuously since that date.

Terms of Reference and General Aims

The terms of reference of the Union are given in the introduction to its Statutes. The intention of the Union is to establish, irrespective of distinctions of nationality, race, religion, professional training and architectural doctrines, relations of friendship, understanding and mutual esteem between architects, and to facilitate the exchange of ideas and knowledge within the profession.

The Union's aims are strictly non-political and it dedicates itself to collaboration with other professional and cultural international organisations, whether these organisations be governmental or not, in the hope of working towards the improvement of social conditions throughout the world. The Union is the only architectural body on an international level available for these purposes.

Membership

Membership is on a corporate basis, each national architectural society being eligible to become a member should it represent a large enough number of architects. It is possible for countries which form a geographical unit, but whose individual architectural societies do not represent the minimum number of architects required for separate membership, to join together and form one Section, e.g. the Scandinavian Section comprising the architectural societies of Denmark, Finland, Norway and Sweden. The aim underlying these rules for membership is that the Union shall be truly representative of the profession as a whole.

With the exception of the Commonwealth countries and of certain countries in the Middle and Far East and in South America, nearly all countries with an established architectural profession are members of the Union.

The member countries are Argentina, Belgium, Brazil, Bulgaria, Chile, China, Cuba, Czechoslovakia, Egypt, France, Germany (the Bundesrepublik and the D.D.R.), Greece, Hungary, Israel, Italy, Japan, Korea, the Lebanon, Mexico, the Netherlands, North Africa (Algeria, Morocco, Tunisia), Poland, Portugal, Rumania, Scandinavia (Denmark, Finland, Norway and Sweden), Spain, Switzerland, Turkey, United Kingdom, U.S.A., U.S.S.R., Uruguay, Venezuela, Yugoslavia.

The R.I.B.A. accepts the responsibility of representing architects of the United Kingdom in I.U.A. affairs and the function of the U.K. Committee appointed by the Council is to maintain liaison between the R.I.B.A. and the International Union, and to deal with all day-to-day matters.

Countries on both sides of the Iron Curtain are represented. It is some measure of the success of the non-political policy of the Union that the division in the Bund Deutscher Architekten (the German national society) between architects in East and West Germany does not exist as far as I.U.A. matters are concerned. The office of the Bund Deutscher Architekten in Frankfurt-am-Main deals on behalf of both East and West German architects with the Secretariat of the I.U.A. and only recently (August 1957) meetings of the two I.U.A. Working Commissions were held simultaneously in West and East Berlin, the two sections of the Bund Deutscher Architekten acting as hosts. Another measure of the stability of the Union in the face of political unrest is the fact that in spite of the strong feelings roused at the end of 1956 by the Hungarian uprising, nothing was done that might have led to the cancellation of the Congress to be held in Moscow. It was merely felt necessary to postpone the Congress to 1958.

Organisation

The senior body of the I.U.A. is the Assembly, who appoint or re-appoint the members of an Executive Committee to carry out the regular business on their behalf. The Assembly meet once every two years—normally at the same time as the Congress—the Executive Committee at least once a year.

The Executive Committee is at the moment composed of the following members: President, H. Mardones-Restat (Chile); Vice-Presidents, Robert H. Matthew [*F*] (U.K.), Yang Ting Pao (China), G. B. Ceas (Italy); Ordinary Members, Mrs. Helena Syrkus (Poland), J. H. van den Broek (Netherlands), R. Corona Martin (Mexico), H. Churchill (U.S.A.), H. D. Dunker (Scandinavia), Leon Kabiljo (Yugoslavia), R. Lebret (France), Marawi Tokunaga (Japan), A. Mordvinov (U.S.S.R.), J. Novotny (Czechoslovakia), Carlos Ramos (Portugal), M. K. Saad-El-Dine (Egypt), A. Sorhegui Vazquez (Cuba), E. Wedepohl (Germany); Secretary-General Pierre Vago (France); Treasurer, Willy van Hove (Belgium). The membership of the Executive Committee is based on distribution of seats between various parts of the world.

At meetings of the Assembly, where the most important business of the Union is transacted, each Section has a right to a number of delegates in proportion to the number of architects which the Section represents.

Activities

The International Union is a comparatively young body, but its activities and influence are rapidly developing. In the last few years the activities and influence of the Union have taken three main directions:

1. *The promotion of professional interests throughout the world*

The value of the existence of the I.U.A. in professional matters has been amply illustrated by the establishment, through UNESCO, of the statutes affecting international architectural and town planning competitions. Furthermore, while the architectural profession in this country is firmly founded, this is by no means true everywhere. The support of countries with established professions enjoying a recognised status such as the United Kingdom is especially valuable for a general improvement.

In addition to being recognised by UNESCO as one of the non-governmental international organisations with consultative status, the I.U.A. is also recognised as representative of the architectural profession throughout the world by other bodies under the Economic and Social Council of the United Nations Organisation: the Union has relations with the World Health Organisation, the Economic Commission of Europe (I.U.A. representatives attend meetings of their Housing Committee as 'observers') and with C.I.B. (Comité International du Bâtiment). It is also in close contact with other non-governmental organisations and recently a Commission of the Union organised on behalf of the International Hospital Federation a seminar on hospital construction.

The I.U.A. sends representatives to important international meetings relevant to the work of the architectural profession: it was, for example, represented at the Congress on Education for government officials held in Geneva in 1957.

2. *The creation of an active forum, through regular meetings and Congresses*

This aspect of the work of the Union need hardly be elaborated, except to say that, with each succeeding formal Congress, its value in relation to serious discussions is becoming increasingly evident. The preparation by member countries of papers and other material for the forthcoming Congress at Moscow indicates that the biennial meeting is already established as a working Congress, with adequate documentation.

The development of increasing facilities

for such meetings and discussions at student level is considered an important part of the work of the I.U.A. At the present time, the secretariat is providing assistance in setting up an international students' body.

3. *The promotion of special studies*

In response to requests arising from Congress discussions, from individual national sections, or from other bodies (e.g. UNESCO), a small number of Working Commissions have been set up in the last few years, for the purpose of carrying out continuous studies in specific and limited subjects.

At the present time these working groups, on each of which several countries are represented, are as follows (the names of the United Kingdom representatives are also given):

Architectural Education Commission
Professor R. J. Gardner-Medwin [*F*]—also *rapporteur* of the Commission.

Professional Practice Commission
Mr. J. M. Austin-Smith [*F*].

Town Planning Commission
Mr. Arthur G. Ling [*F*];
Mr. F. R. Stevenson [*A*] (Deputy).

Housing Commission
Mr. Peter Shepheard [*A*];
Mr. F. R. S. Yorke [*F*] (Deputy).

Research (Industrialisation of Building) Commission
Mr. Gontran Goulden [*A*].

Public Health Commission
Mr. Donald Goldfinch [*F*]—elected Chairman of the Commission 1957;
Mr. R. Llewelyn Davies [*F*] (Deputy).

School Buildings Commission
Mr. Kenneth Campbell [*A*];
Mr. S. A. W. Johnson-Marshall [*F*] (Deputy).

Standing Committee for International Competitions
Lt.-Col. H. P. L. Cart de Lafontaine [*F*].

Secretarial responsibility for the Working Commissions now falls on certain of the National Sections, and one member of each Commission acts as *rapporteur* in charge of its programme of work and is responsible to the Executive Committee of the Union.

The United Kingdom Section have assumed responsibility for the secretarial work of the Commission on Architectural Education. As mentioned above, Professor Gardner-Medwin acts as the *rapporteur* responsible to the Executive of the I.U.A.

The individual value of these Commissions varies with their membership and with the subjects studied. The general value of such study groups, as and when the need for them arises, appears, however, to be firmly established; the Public Health Commission in particular, with its recent seminar on hospital construction referred to above (the first of its kind), has given an example of the contribution that a study group of this kind may be expected to make in future, provided it is adequately supported.

Another example of the work of the Commissions is provided by the School Buildings Commission who have been working on a project sponsored and partly financed by UNESCO. They are, at the moment, engaged in studying the requirements of school building in underdeveloped countries, and have initially considered the position in Morocco and India. The Union is likely to be asked by UNESCO to undertake further tasks of this type in the future.

The Town Planning Commission has produced an international notation for town planning which is being used for all plans submitted for exhibition and publication at the Moscow Congress. It has also in preparation an international survey on car-parking.

Finally the Architectural Education Commission has a valuable task ahead of it in the comparison of teaching methods and curricula in various countries and the investigation of means for promoting exchanges of teachers and students of architecture.

The development of this aspect of the work of the I.U.A.—the promotion of special studies—is, however, only beginning and in future it may prove to be of the greatest value in the advancement and dissemination of knowledge.

ROBERT H. MATTHEW [*F*]

Correspondence

ARCHITECTURE AND THE OTHER ARTS

The Editor, R.I.B.A. Journal

SIR,—Did Mr. Reg. Butler's words when spoken have a siren-like charm which in cold print they have not? Or is there some other explanation of the wide welcome they appear to have had at the discussion? I have read his speech several times and as far as I can find its contents may be summarised like this: first, there are only moral reasons why the arts should collaborate (and moral reasons, he implied, don't matter); second, don't talk to the artist—buy a piece from him if you must but otherwise keep out of his way; third, 'I put the responsibility fairly and squarely on the shoulders of the architect' (in other words, 'count me out'), but he is not to worry as he can easily 'get rid of the moral imperative'.

I am neither an architect nor an artist; on the other hand I have had much contact, depressing and inspiring, with both sorts and I have some share in their training. I should be grateful if you would allow me space to comment on this important matter.

1. The question why there ought to be collaboration cannot be answered briefly. It involves the whole issue of the function of the arts in society in general and modern society in particular. The shortest statement to be made is that any division between the arts is essentially artificial, and that the architect, who to his credit is increasingly concerned with the shaping of man's physical environment, must also consider its spiritual dimension.

2. Many architects hold, and Mr. Butler encourages them to hold, an out-dated view of the character of the artist. It is true that there are many artists who revel in their isolation, who consider their work 'crucified' if it is consciously placed in relation to architecture but are content to see it disappearing on to some private patron's back stairs or on the walls and pedestals of some gallery. It is true also that more and more artists look for opportunities to make positive contributions to the creation of a vital and harmonious environment, where the individual spirit finds expression within the uniformity inevitable in an age of standardisation. Such artists are keenly interested in architecture and in new materials and techniques.

3. It is time people stopped making glib references to an ideal past when the arts flourished in perfect synthesis. When Le Brun painted the ceiling of the Galerie des Glaces at Versailles he was making a less important contribution to that room than did the glazier who fixed the mirrors. I do not believe that the serious artist of today will want to play so empty a role.

4. The first step towards a situation in which collaboration of a fruitful sort becomes possible must be the bridging of the gap that lies between architects and artists. I think it is true to say that architects are more ignorant of developments in modern art than are artists of modern architecture. How much do architectural students learn of 20th-century art? Could not some of the time and emphasis devoted to the history of architecture be given to the study of the arts since Rodin and Impressionism? At the Leeds College of Art students of the School of Architecture and Town Planning spend part of their first year on a course in the fundamentals of design organised by the School of Painting. Time alone will show to what extent this course benefits their architectural designs, but it is obvious that these students emerge from it much more understanding of the artist's purpose and more sensitive to form and colour. Artists on the other hand tend to be impatient of the factors that limit the architect's possibilities. Architectural criticism could make them more aware of the problems involved, but alas, architectural criticism is wellnigh non-existent. Artists, who are accustomed to the robust attentions of art critics, are understandably critical of a professional organisation which shelters the bad as well as the good architect and appears to stifle really outspoken criticism.

There is much more to be said. It is a great pity that at the discussion the representatives of the arts should have been a sculptor incapable of collaborating and a painter-critic who echoed his opinions. They are not, thank God, representative.

Yours faithfully,

NORBERT LYNTON

TRADE LITERATURE

DEAR SIR,—'Trade catalogues will be welcomed. . . . ' Please, is it not possible for a notice to suppliers to be published at frequent intervals in the JOURNAL setting out what the architect looks for in trade literature? It is astonishing how much quite useless matter is received, without price or date, or even proper information on sizes, materials, and supply. These can only find their way from the envelope to the nearest waste-paper basket, and are such a waste of effort for everyone. Suggested wording as follows—comments from members welcomed:

NOTICE TO ADVERTISERS OF BUILDING MATERIALS AND COMPONENTS

Requirements for Trade Literature

The following list of points needed by architects in all trade literature is issued for the guidance of suppliers, in the interest of efficient advertising and information.

1. *Full Technical Information.* Purpose, properties and special features of the product. Compliance with British Standards and other official lists, and technical performance data.

2. *Materials.* Materials and finish (including colours) of all parts and materials advertised. Where a minimum life is guaranteed, this should be stated.

3. *Size and Fixings.* Detailed dimensions of interest to be given and means of fixing stated.

4. *Price.* Literature without prices is rarely of interest. Current prices please, with mention of special quantity rates, etc., if provided.

5. *Supplier.* Current supply dates would attract useful inquiries and avoid delays.

Name, address and telephone number of suppliers and agents able to deal with technical inquiries.

6. *Date.* Catalogues rapidly fall out of date and are misleading unless clearly and prominently dated.

B.S.S. 1311 sets out standard sizes and requirements for trade information, compliance with which will attract ready filing and reference in architects' offices.

A small printed label to the above effect would, incidentally, also be of the greatest use to architects for inclusion with inquiries to suppliers.

The inquiry might even take the form of a questionnaire card of standard format, with panels for information on prices, suppliers, etc., (and carrying detailed instructions on reverse). This could then be filed for the readiest possible information, and would undoubtedly become the model for a great deal of trade literature for architects.

Yours faithfully,

DONALD W. INSALL [*A*]

Book Reviews

One Hundred Years of Architecture in America—1857–1957, by *Frederick Gutheim.* 9¼ in. × 9½ in. 96 pp. incl. illus. New York: Reinhold; London: Chapman and Hall. 1957. £1 12*s.*

Mr. Gutheim prepared an important exhibition of photographs for the Centennial Convention of the American Institute of Architects held at Washington in 1957. The exhibition was designed to show the development of American architecture over the past hundred years, and in particular, to illustrate buildings of especial significance. All the black-and-white photographs and six of the ten coloured pictures displayed at Washington are included in this book.

Mr. Gutheim has made an excellent choice and those unfamiliar with the American scene will find particularly illuminating his coverage of 19th and 20th-century work up to the Second World War. There are fine pictures of monumental buildings such as the Capitol and Lincoln Memorial at Washington, and the Beaux Arts School is well represented by the work of McKim, Mead and White, Paul Cret and John Russell Pope. Among architects less well known are Frank Furness and the brothers Greene—the former represented by his polychromatic Academy of the Fine Arts at Philadelphia and the latter by the extraordinary Robert R. Blacker house, Pasadena, with its overtones of the Arts and Crafts movement, a house which, unfortunately, has lost its furniture since these photographs were taken. The glass curtain wall of Willis Polk's Hallidie Building in San Francisco (1918) will surprise many modernists, as indeed, might Irving Gill's house for Miss Scripps (1916).

The least satisfying part of the book in my opinion is the last chapter—'Trends in Recent Years', which is surprisingly dull despite Harwell Harris's house at Ojai; 100 Memorial Drive, Cambridge; and Mies' buildings at I.I.T. And the opening fanfare 'Ten Buildings in America's Future' is more in the nature of a photographic *tour de force* than a fair representation of the buildings selected, although, of course, one must allow some artistic licence in a public exhibition.

This book is so important a survey of a nation's buildings that one wonders why the author has been limited to so small and unsympathetic a page size (9 in. × 9 in.) which has resulted in much overcrowding and unevenness in layout. Surely such a subject warranted one of the more lavish presentations we expect from Reinholds. T. H.

Razón y ser de los tipos estructurales, by *E. Torroja.* 10½ in. 392 pp. incl. illus. Madrid: Instituto Técnico de la Construccion y del Cemento. 1957.

Professor Torroja's reputation extends far beyond the borders of his native Spain, and his work as a structural engineer is very widely admired among architects. In this book, which contains no calculations or technicalities, he has made a most commendable attempt to interpret the relationship between form and structure in language intelligible both to the architect and the engineer, so that they may have a better appreciation of each other's responsibilities and points of view. A large number of photographs are included of buildings of the past and of the present, and there are also simple, explanatory sketches in the text by the architect G. Echegaray. One would like to see the book available in English.

J. C. P.

Northumberland, by *Nikolaus Pevsner.* (The Buildings of England *series,* BE 15.) 7¼ in. 362 + 'notes' pp. incl. map, plans and illus. + 64 pls. Harmondsworth: Penguin Books. 1957. (Paper) 8*s.* 6*d.*

In this fifteenth volume two new features are introduced: O.S. grid-numbers in the margins, and sections on specific topics by other authors; moreover, two new subjects appear—the 'peles' or 'pele towers', here described as tower-houses, and Hadrian's Wall. The Mithraeum is illustrated but appears in the text under another name. All periods are given their usual due weight; three Saxon churches are illustrated, and the 'low, almost cavernous, tunnel-vaults' at Kirknewton and Embleton are described as 'exciting survivals'. The book, like others in the series, will make us realise how much we missed when we were there.

The foreword records how, after the critical doubts of 1955, means were found to continue the series, due to the Leverhulme Trust, Birkbeck College and the Guinness Company ('Guinness' here may really be said to be 'good for us'). It is truly a matter for thankfulness.

H. V. M. R.

Religious Buildings for Today, edited by *John Knox Shear.* (Architectural Record Book.) 12 in. 183 pp. incl. illus. New York: F. W. Dodge Corporation. 1957. £2 10*s.*

This is an ARCHITECTURAL RECORD book and consists of a number of articles and reproductions from various issues of the American magazine ARCHITECTURAL RECORD over recent years.

The emphasis is on buildings erected within the American zone of influence, viz. the United States, Hawaii and the Philippines, with the exception of a review of Le Corbusier's church at Ronchamp and Basil Spence's design for Coventry Cathedral. The major part of the volume is devoted to illustrations and short descriptions of Catholic and Nonconformist churches and Jewish synagogues; the standard of architecture ranges from the K.T.I. synagogue in Port Chester, New York, designed by Philip Johnson, and Eero Saarinen's M.I.T. chapel, to lesser works by architects whose names are not so widely known.

The various articles which are included deal with a wide variety of subjects, such as structural expression in religious buildings, worship and the arts, the church and

its school, and collegiate religious architecture. One of the most interesting contributions is by a layman, Pastor Alwin Rubin, entitled 'Would you build another contemporary church?' He is most emphatic in saying that he would do so, and as he has already had experience of working with such architects as Belluschi, his opinions can be considered seriously. Much of what he says in his short article is worth passing on to clients, particularly when he suggests that architects should be allowed to use their imagination without hindrance, and hints that the scheme prepared by the architect should not be tampered with by the client. A particularly practical suggestion is on the subject of fees: 'Pay him [the architect] the going rate, so he can do a good job for you'.

There is much in this book which is worth serious study and which should be of interest to both architect and church building committee. The illustrations are excellent and clearly drawn plans accompany most of the photographs. Some of these plans are not lettered as adequately as one would like, but generally it is easy to understand the scheme from the information provided. The limitation of the book lies in the fact that it is primarily American material produced from an American magazine and written for American readers. On the other hand, English church builders would do well to take note of the imaginative approach adopted in many cases and the greater freedom given to American architects by church building committees, when they are presented with the problem of designing a new church in the modern idiom.

EDWARD D. MILLS [*F*]

Nederlandse Architectuur. *Uitgevoerde Werken van Bouwkundinge Ingenieurs.* 11¼ in. 379 pp. incl. illus. Argus, Amsterdam. 1956. £4 4*s*.

This is principally a photographic record of the work of the Architectural Section of the Association of Engineers at Delft, marking the ten years of its existence. The Delft Group of architects, who are usually associated with the views and work of Professor Grandpré Molière, are in reaction to the C.I.A.M. Group. They are largely concerned with the progressive evolution of traditional forms.

It is interesting to see in this volume that there is quite a wide range within this conformity to tradition. At one end, there are the strongly traditional forms of the work of de Rouville de Meux and Friedhoff, and of Grandpré Molière, too; then the strange empirical, yet almost eclectic, work of F. P. J. Peutz; next, the near-Scandinavian modernism; and, at the farthest extreme, the work of van der Broek which, probably because much of it is in Rotterdam, is not far removed from the Rotterdam Group itself—the old Opbouw.

Most types of building are represented, some of the most interesting being commercial and industrial types; there are also some bridges and canal installations. By no means all the architecture is of the last ten years, nor even post-World War II; much dates from the 'thirties and some from the 'twenties. A number of the buildings are well known in this country, but many others will be new to readers here. In general, this is an interesting record of Dutch architecture of the last 25 years, although by its very nature incomplete.

It is very well produced. Dutch books usually are. How wise are their wide margins and the ample spacing between photographs! Most of the buildings have plans, and if these are inevitably rather small, one is thankful for them, as their omission makes nonsense of architectural illustration and they are too frequently omitted. A brief history, in Dutch, from Berlage onwards (Berlage being the starting-point for the Delft Group), serves as an introduction and leads the reader to the Group's present standpoint.

M. D. BEASLEY [*A*]

Willem M. Dudok. 11 in. 2nd ed. 168 pp. incl. illus. Amsterdam: G. van Saane. 1957. £2 16*s*.

This book on the architect and his work is a new edition of that first published in 1954, the product of an impressive honorary committee and numerous contributors. Its interest lies, not so much in the record of the architect's life's work, but in the presentation of the mind of the normally reticent Willem Dudok through his own few statements and those of his contemporaries and admirers.

Dudok's work is so essentially national that, without some knowledge of the Dutch and the Netherlands, it is neither possible to understand fully nor appreciate his architecture. Furthermore, the position occupied by Dudok is a transitional one between the major representative movements of this century and the last, and Dudok is hardly typical of either. This book throws some light on Dudok's relationship to the wider field of architecture in his time.

It is both too early and too late to expect an accurate or by any means final assessment of Dudok's architecture. He is as likely to be overestimated by his older admirers as he is to be misunderstood and summarily dismissed by a puzzled younger generation. To the latter especially, and to the others too, the most illuminating key to Dudok's achievement and worth is to be found by comparing the earlier and well-known works at Hilversum with those of the post-World War II period, a comparison both indicative and significant.

M. D. BEASLEY [*A*]

Sports Buildings and Playing Fields, by *Richard Sudell* and *D. Tennyson Waters.* 10 in. 240 pp. incl. illus. Batsford. 1957. £3 3*s*.

A comprehensive textbook on sports buildings and playing fields is especially welcome when a programme of building for broader education is going ahead as quickly as it is today, and in an era where criticism is levelled at the interests which deflect recreational activities away from direct participation.

The authors have considerable first-hand experience of their subject, and no criticism can be levelled at the facts and detailed information given. The book is divided broadly into three parts. The first part deals with playing fields and sports ground construction with much practical guidance and information, which may be common knowledge to the landscape architect, but which will be of considerable assistance to the architect, who only occasionally has the opportunity to design buildings for sports and outdoor activities. The second part deals in great detail with sports pavilions. Whilst it is easy to say that there is rather too much elementary explanation of planning requirements, it is only fair to add that this explanation is written with great care and clarity. The third part of the book deals with buildings for special games and sports. It includes chapters on gymnasia, stadia, swimming pools, sailing clubs and a chapter devoted to golf with its special problems for the landscape architect.

The authors have selected for the majority of their illustrations buildings in the British Isles, for the very commendable reason that these can be visited more easily by architects with similar projects in hand, but more photographs of the most recent and best work abroad would have added to the scope and value of the book. Perhaps, to provide space for such additional illustrations the text could have been reduced by the condensation of much of the factual information into tabulated form. A more standardised presentation of the plans illustrated would also have helped in the reader's reference and comparison.

SAVILE GREENWOOD [*A*]

Display Presentation, by *Beverley Pick.* 11¼ in. 144 pp. incl. illus. Crosby Lockwood, 1957. £2 10*s*.

This is a book that cannot fail to inspire all concerned with better display presentation, whether in the field of exhibitions, windows or outdoors. It is not one which you look at and put away on the shelf, being too full of ideas and schemes which have stood the test of being successfully carried out.

The author has performed a useful service in presenting a carefully chosen selection of his work and some idea of how it was achieved. Nearly all the projects illustrated were produced by Beverley Pick in collaboration with his principal associates, Nevill Walters and Leonard Collins.

He covers all aspects of exhibition and displays, the presentation of sketch designs, scale models and display models, exhibition murals and paper sculpture, photography, captions and lighting. Much valuable information is included on methods of manufacture relating to modern techniques of three-dimensional presentation. There is also a chapter on street decoration, for which Beverley Pick is perhaps best known by his design for Regent Street Snow Flake Christmas decorations in 1955.

The book is well presented and of a size pleasant to handle.

LESLIE GOODAY [*A*]

Isambard Kingdom Brunel, by *L. T. C. Rolt*. 8¾ in. xv + 345 pls. incl. illus. + 16 pls. Longmans, Green and Co. 1957. £1 5*s*.

Literature on the history of engineering is surprisingly sparse in view of the richness of the material available. A true epic quality appears in the scope of many of the enterprises and personalities of the engineers concerned and this is particularly so in the case of Isambard Kingdom Brunel, whose imaginative concepts were on the grand scale.

In the present biography this quality is implicit rather than explicit and Mr. Rolt's straightforward narrative allows the facts to gain their own effect. Such a book was long overdue and it includes a good deal of fresh material—especially on the many vicissitudes which attended the completion of the 'Great Eastern'.

The difficulty of presenting such a subject to a relatively wide public consists chiefly in giving simple yet telling accounts of the various technical problems and operations which occupied so great a part of Brunel's life. Mr. Rolt overcomes this admirably and gives us a very readable book without omitting adequate description of practical issues. Where we could wish for greater detail is in the inner life of the man himself, but of this we see progressively less as the private life becomes more and more absorbed by his work.

A man of enormous energy and versatile thought, Brunel's achievements in his 53 years (1806–59) are everywhere marked with greatness. The Great Western Railway, the steamships and Clifton Suspension Bridge represent his chief works. All showed an originality and inventiveness which we cannot readily visualise over the intervening century of rapid technical advance.

ELAINE DENBY [*A*]

Foundations: Design and Practice, by *Elwyn E. Seelye*. 10¾ in. xxviii + 457 pp. incl. illus. New York: John Wiley and Sons. London: Chapman and Hall, 1956. £6 8*s*.

The growing scarcity of land, and the consequent higher density of development, have led in urban areas to the fuller use of sites which were formerly considered unsuitable for building upon. The now taken-for-granted 'point' blocks of domestic and commercial projects, together with buildings for the nuclear age, have increased the problem of foundation construction for buildings.

Mr. Seelye at this opportune time gives much useful information in a lucid fashion, together with details of less complex requirements. The field covered by his book is similar to that of the British publication by F. D. C. Henry, but the American offers much in addition, in fact a reference and textbook combined.

After dealing with every type of foundation and with soil mechanics in theory, with many examples amply explained by numerous drawings, diagrams, graphs and tables; chapter No. 16 deals with Costs. Field practice and specifications are given their due attention and abundant practical experience is liberally dispensed throughout this volume. Among the commendable features of this publication are the excellent illustrations, and mention should be made of an *aide-mémoire* at the end of each section called 'Red Lights'.

To be of maximum use the author of a book on this subject must organise his material accessibly, and this Seelye does. Students might do well to remember that some of the terms used have a different meaning in America to that to which we are accustomed in Britain, and the tables and data refer to American practice. The fundamental principles, however, apply everywhere.

F. S. ALEXANDER [*A*]

Estimating General Construction Costs, by *Louis Dallavia*. 9½ in. 2nd ed. viii + 197 pp. New York: Dodge Corpn. 1957. $8.50.

Advertised as 'the first estimating handbook ever published that cannot go out of date', this book presents a method of computing direct production costs for earthmoving, steel and reinforced concrete construction and various kinds of carpentry and mason's work. The method requires the combination of a series of indices and factors derived from the author's experience and presented in tabular form. These factors assess the effect on productivity of such variables as labour force and type and quantity of equipment for each part of the work. Application of the measures of productivity thus found to actual labour and equipment costs operating at the time and place of the estimate gives the unit cost for the work. This can then be extended to a total for the quantity involved.

This book will probably be of little use to the architect working in Britain. Certain conclusions as to the effect of design on cost and productivity may be gleaned from some of the tables. It would, however, be naïve to assume that this particular author's conclusions in this field were of universal and everlasting significance. Time changes and so do architects, builders, and the economic circumstances of nations.

A. G. D.

Plumbing in Building, by *Sydney Webster*. 8¾ in. viii + 148 pp. incl. illus. Batsford. 1957. £1 5*s*.

There is a great opportunity for an up-to-date work on plumbing, which would cover the same ground as Blake's time-honoured *Drainage and Sanitation*, and Mr. Webster has endeavoured to fill the gap.

The arrangement of the book is encouraging. Many of the earlier chapters in Blake, irrelevant to architects, are omitted, certain theoretical aspects being dealt with by Webster in a companion volume. Valuable elementary information on water board regulations is given: water storage is separated from water supply and consigned to a special chapter. The arrangements thereafter follow the normal order. The subject of drain-laying and testing is adequately dealt with in very much smaller compass than in Blake's work.

With regard to principles, 83 (1) of the Model Building By-laws calls for a manhole wherever a drain changes either its direction or its gradient. For that reason the drainage layout shown, Fig. 48 (which closely follows the recommendation of the relevant Code of Practice for Drainage), would not satisfy many local authorities, and this is insufficiently emphasised in the text. Also since Fig. 48 shows the transition from a 4 in. to a 6 in. drain made in a manhole, it would have been interesting to have had a larger detail at this point to show good and bad practice in the transition.

Perhaps the most interesting part of the book is that on 'Work above Ground', where by dealing very briefly with the one-pipe and dual-pipe systems, relegating all complexities, e.g. ranges of fittings, to a later chapter, Webster is able to introduce the reader to the relevant Code of Practice on (and to the subject of) the single-stack system. He shows the attention to design in detail and workmanship needed to get the most economical results from this system, and how new types of fittings are available through the initiative of makers of sanitary goods to satisfy these needs.

The limitations of the author's method of writing diminish the value of his remarks on the design principles behind the single-stack system. Induced siphonage and back-pressure are dealt with together on one page, and self-siphonage of trap seals elsewhere.

The book is adequately illustrated and has an index, but no bibliography.

CECIL J. SEARLE [*A*]

Stones of Britain, by *B. C. G. Shore*. 10 in. xii + 302 pp. + 168 plates. Leonard Hill. 1957. £3 6*s*.

This is an eminently readable book, of great aesthetic and practical value. It is a real pleasure to look through the 168 full-page photographs, while the well laid out text offers a remarkable accumulation of present-day knowledge upon geology and masonry.

The author's interests and abilities are revealed to be very wide indeed, and find forceful expression. Where controversial subjects are covered he puts all his cards on the table, and briefly so, which is refreshingly different from the established practice of some other sources which seem to give every possible item of information short of the actual answer.

It is pertinent for us to realise that visitors from the Commonwealth and other countries have an approach to our heritage in stone which may be very different from ours, and it is good for us to be reminded of this. The author never wavers from his determination to bring out the urgency of protecting our historic legacy in stone.

There are sections on the chemistry of building stones, upon structural repairs, upon renderings and mortars, 'dentistry repairs', drying out of damp walls, heating of buildings and conservation and maintenance of stone work, together with maps and lists of quarries.

C. B. MARTINDALE [*F*]

Sir George Gilbert Scott

THE FAMOUS NAME of Sir Gilbert Scott has aroused, and still arouses, varied reactions in architectural minds. To many, he is perhaps a byword of destructive restoration and unoriginal Victorian Gothic design; to others, he is the chief star in the architectural firmament of the last century and the preserver of many buildings that might otherwise have fallen into ruin.

Since 1878, the year he died, when THE BUILDER produced two lists of his works, no thorough account of his achievement seems to have appeared, though there have been articles in the ARCHITECTURAL REVIEW (by M. S. Briggs) in 1908 and sections in books like the Rev. Basil Clarke's *Church Builders of the Nineteenth Century*. It was therefore thought that a bibliography with lists of works, as thorough as practicable, should be attempted by the recently appointed historical research officer of the R.I.B.A. Library; and in the last few months this has been accomplished, though with many gaps and uncertainties. It proved an unexpectedly long and complicated operation.

A sounder picture of Sir Gilbert's achievements now arises. The total number of his architectural 'jobs' (new buildings, alterations and restorations), by himself alone or in association with his sons or others, appears to be 903; those by his early partnership, Scott and Moffatt, number 72—total, 975! This number includes unidentifiable places but excludes 21 that may have been mere consultations. These are in 573 places (towns, villages or suburbs). The buildings are distributed quite remarkably through the counties of England, ranging from 48 in Yorkshire to two even in Rutland, and one in Monmouthshire, with a doubtful one in Cumberland. Even the names of the places where Scott built or restored are sufficiently varied in themselves to furnish a study in history and picturesqueness: Houghton Conquest and Marston Moretaine, in Bedfordshire; Aston Sandford, Buckinghamshire; Cherry Hinton and Tydd St. Giles, Cambridgeshire; Odd Rode, Cheshire; Chudleigh Knighton, Devon; Edvin (not Edwin!) Loach, Lugwardine, and Tedstone Delamere, Herefordshire; Croxton-Keyrial, Leicestershire; Stoke Talmage, Oxfordshire; Cleobury Mortimer, Salop; Hatch Beauchamp, Somerset; Hampton Lucy, Warwickshire; Langley Burrell, Wiltshire; and (last but by no means least attractive) Laughton-en-le-Morthen and Middleton Tyas, in Yorkshire.

The total number of Scott's works, spread over some 44 years of his practice (*c.* 1834–78), with some works finished or carried out posthumously, means on an average 22 a year, or one in every period of just over a fortnight. The chronological chart adjoining displays his dated works; these are about 475, less than half the total, but include the more important achievements. The chart shows first a gradual rise in the totals from two jobs over 1834 to 1837 to 20 in 1853, with slight peaks in 1843, 1845 and especially 1848. The figure rises to about 64 in 1856, and then, with small fluctuations, to the two highest peaks—about 52 in 1865–66, and again in 1873–75, three years before his death. Afterwards the number slumped, noticeably between 1876 and 1877 and, naturally, at Scott's death; at that time there were still about 16 jobs awaiting completion—the last additions by his sons extending up to 1917. This chart—even with its severe limitation—enables the sequence of events to be studied. One can, for instance, speculate why Scott was entrusted with such weighty responsibilities as the restoration of Ely Cathedral and the Surveyorship of Westminster Abbey so early in his career as (in that order) 1847 and 1849. Many of his works extended, moreover, over many years: the restorations of St. David's Cathedral and Barnstaple church over 16, that of St. Albans 21, Lichfield 22 (plus six after his death), Bridlington Priory 28 (plus two), Westminster 29, and Ely Cathedral 31—in this case plus 16 years after his death, making 47 in all!

In the matter of restoration (whatever precise meaning that word may carry) it is difficult to assess Scott's standards. A number of epithets used by writers (some of them long after the work was done, and many mere personal opinions) have been collected and a chart made of the incidence in time of the works concerned. Although some expressions (e.g. 'completely', 'extensively', 'thoroughly', 'much', and 'considerably') may be considered neutral, either of blame or praise, one finds, beginning at the lowest grade, 'bad' restoration, a building 'mutilated sorely', and one 'impaired'; a little higher up, 'drastically' in several cases, modified as 'drastic but successful' in another. The terms of praise, however, though not quite so frequent, are unmistakable: 'well' restored, 'using old fragments', 'very tactfully', 'admirably', 'on far more conservative lines than many', 'old material re-set', and 'strict attention to the original design'. These are the undoubted testimonies that are more entitled to live in history. Chronologically, these levels vary curiously, and are no doubt due to Scott's inability to be in two or three places at once: the low ebb in the '40's suddenly rose at the end of that decade, low and high occurred together in the middle '50's, extremes curiously coincided between 1859 and 1862, and both categories co-existed in a few cases throughout the late '60's and early '70's. Incidentally, at least six Saxon churches were among those he restored. His book *A Plea for the faithful restoration . . .* appeared as early as 1850.

Scott's literary works are notably numerous—62, including articles in the R.I.B.A. *Papers* (afterwards *Transactions*)—and covered a wide range of subjects; among other things he edited a work of *Family Prayers*. In the 'List' a number of varied subjects have been brought together under the heading 'Biography', and all subjects covered by a chronological list, which shows the very varied activities of this former President of the R.I.B.A.

H. V. MOLESWORTH ROBERTS

[N.B.—*A number of revisions to the bibliography have already been received, but they do not materially affect the numbers quoted.*]

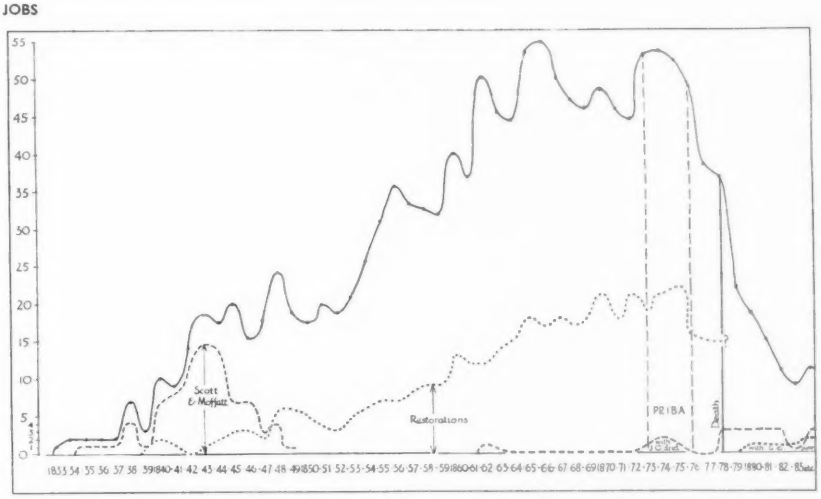


Chart of approximate number of accurately dated works (48% of total) compiled from the R.I.B.A. Library's List of his works, dupl. typescript, 1957.

Notes and Notices

NOTICES

Sixth General Meeting, Tuesday 15 April 1958 at 6 p.m. The Sixth General Meeting of the Session 1957–58 will be held on Tuesday 15 April 1958 at 6 p.m. for the following purposes:

To read the Minutes of the Fifth General Meeting held on 4 March 1958.

To present the Royal Gold Medal for 1958 to Mr. Robert Schofield Morris, B.ARCH., F.R.A.I.C. [*F*] (Canada).

(Light refreshments will be provided before the meeting.)

One Hundred and Twentieth Annual General Meeting, Tuesday 6 May 1958 at 6 p.m. The One Hundred and Twentieth Annual General Meeting will be held on Tuesday 6 May 1958 at 6 p.m. for the following purposes:

To read the Minutes of the Sixth General Meeting held on 15 April; formally to admit new members attending for the first time since their election.

To receive the Annual Report of the Council and Committees for the official year 1957–58.

(Copies of the Annual Report will be sent to members on 22 April.)

Note: It will facilitate matters if members will give the Secretary prior notice of any questions they may wish to ask.

To nominate two members as Hon. Auditors for the ensuing year.

(Light refreshments will be provided before the meeting.)

Session 1957–58. Minutes V. At the Fifth General Meeting of the Session 1957–58 held on Tuesday 4 March 1958 at 6 p.m.

Mr. Kenneth M. B. Cross, M.A., President, in the Chair.

The meeting was attended by about 350 members and guests.

The Minutes of the Fourth General Meeting held on Tuesday 4 February 1958 were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President: *As Fellow:* Jack Godfrey-Gilbert. *As Associates:* J. R. Allen, D. F. Bayley, G. A. Billington, William Cove, M. W. Dash, K. G. Dines, I. R. Ferguson, R. D. Goodall, R. C. Grierson, Siegfried Heymann, S. C. Horne, D. J. Jones, R. E. Millard, J. C. Morgan, P. J. N. Penlington, R. B. Prisgrove, R. T. P. Skelcher, A. C. Stonebridge.

Sir John Wolfenden, C.B.E., Vice-Chancellor of Reading University, having read a paper on 'The Architect's Role in Society', a discussion ensued and on the motion of Sir Howard Robertson, M.C., A.R.A., D.Litt., S.A.D.G. [Past President], seconded by Mr. John Gloag [*Hon. A*], a vote of thanks was passed to Sir John Wolfenden by acclamation and was briefly responded to.

The proceedings closed at 7.15 p.m.

British Architects' Conference, Newcastle upon Tyne, 14 to 17 May 1958. A cordial invitation is extended to all members and Students of the R.I.B.A., the Allied Societies and the Architectural Association to attend the Conference to be held at Newcastle upon Tyne from 14 to 17 May. Full details of the programme and the application form were enclosed with the March issue of the JOURNAL. Application forms should be completed and sent to the Secretary, R.I.B.A., as soon as possible but in any case *not later than* 25 *April*.

Members are again reminded that hotel reservations should be made as soon as possible. Details are given in the Conference programme and also appeared in the January and February issues of the JOURNAL.

R.I.B.A. Kalendar. As a result of the Council's decision, as mentioned in the February 1958 number of the JOURNAL, a complete edition of the Kalendar will not be issued this year, but a Supplement to the 1957–1958 edition will be published in the autumn. This will cover changes in membership, but will not contain changes of address.

New Building Materials and Preparations. The attention of members is drawn to the fact that information in the records of the Building Research Station, Garston, Watford, Herts, is freely available to any member of the architectural profession, and architects would be well advised, when considering the use of new materials and preparations of which they have had no previous experience, to apply to the Director for any information he can impart regarding their properties and application.

Classes of Retired Members. Under the provisions of Bye-law 15 applications may be received from those members who are eligible for transfer to the class of 'Retired Fellows', 'Retired Associates' or 'Retired Licentiates'.

The Bye-law is as follows: 'Any Fellow, Associate or Licentiate who has reached the age of 55 and has retired from practice may, subject to the approval of the Council, be transferred without election to the class of "Retired Fellows", "Retired Associates", or "Retired Licentiates", as the case may be, but in such case his interest in, or claim against the property of the Royal Institute shall cease.'

'The amount of the annual subscription payable by such "Retired Fellow", "Retired Associate", or "Retired Licentiate" shall be one guinea, or such amount as may be determined by resolution of the Council, excepting in the case of those who have paid subscriptions as full members for 30 years, and who shall be exempt from further payment. A "Retired Fellow", "Retired Associate", or "Retired Licentiate" shall have the right to use the affix of his class with the word "Retired" after it, shall be entitled to receive the JOURNAL and Kalendar, shall be entitled to the use of the Library, and shall have the right to attend General Meetings, but shall not be entitled to vote. A "Retired Fellow", "Retired Associate", or "Retired Licentiate" shall not engage in any avocation which in the opinion of the Council is inconsistent with that of architecture. Nothing contained in this Bye-law shall affect the rights of persons who at the date of the passing of this Bye-law are members of the classes of "Retired Fellows" and "Retired Members of the Society of Architects".'

CURRENT R.I.B.A. PUBLICATIONS

The following is a list of the main R.I.B.A. publications with their prices.

Agreement, Forms of

Form of Agreement for General Use between a Private Building Owner and an Architect or a Firm of Architects.

Form of Agreement for General Use between a Building Owner (being a Statutory Authority) and an Architect or a Firm of Architects.

Form of Agreement between a Local Authority and a Firm of Architects for Housing Work.

Form of Agreement between a Local Authority and a Firm of Architects for Multi-Storey Flats.

Form of Agreement between the Promoters and a Firm of Architects appointed as the Result of a Competition.

Price 6*d*. per form (inclusive of purchase tax). Postage 4½*d*.

Architect and His Work, The

Price 6*d*. Postage 4½*d*.

Before You Build. Free

Certificates, Architects', Form Prepared by the Practice Committee

Copyright Book of 100 Certificates.
Price 17*s*. (inclusive of purchase tax). Postage 1*s*. 6*d*.

Conditions of Engagement and Scale of Professional Charges

Price 6*d*. Postage 3*d*.

Contract, Form of Agreement and Schedule of Conditions

For use with quantities: 1939 revised 1956. Copyright.

For use without quantities: 1939 revised 1956. Copyright.
Price 2*s*. 2*d*. per form (inclusive of purchase tax). Postage 6*d*.

Adapted for the use of Local Authorities, for use with quantities: 1939 revised 1956. Copyright.

Adapted for the use of Local Authorities, for use without quantities: 1939 revised 1956. Copyright.
Price 2*s*. 5½*d*. per form (inclusive of purchase tax). Postage 6*d*.

Fixed Fee Form of Prime Cost Contract for use in the repair of war-damaged property: 1946 revised 1956. Copyright.
Price 2*s*. 2*d*. (inclusive of purchase tax). Postage 6*d*.

Cost Plus Percentage Form of Prime Cost Contract for use in the repair of war-damaged property: 1946 revised 1956. Copyright.
Price 2*s*. 2*d*. (inclusive of purchase tax). Postage 6*d*.

Examination, Intermediate, Questions Set At

Price 1*s*. per examination. Postage 4½*d*.

Examination, Professional Practice, Questions Set At

Price 6*d*. per examination. Postage 3*d*.

Examinations, Final and Special Final, Questions Set At

Price 1*s*. per examination. Postage 4½*d*.

Forms of Articles of Pupilage

Copyright. Price 1*s*. 8*d*. (inclusive of purchase tax). Postage 3*d*.

Membership of the R.I.B.A.

Particulars of the Qualifications for Associateship.
Price 2*s*. 6*d*. Postage 6*d*.

Party Wall Notice Forms, for Use Under the London Building Act

Form A—Party Structures.

Form B—Party Fence Walls.

Form C—Intention to Build within Ten Feet and at a lower level than the bottom of the foundations of adjoining Owner's Building.

Form D—Intention to build within Twenty Feet of the adjoining Owner's Independent

Building and to a depth as defined in Section 50(1)(*b*).

Form E—Party Walls and Party Fence Walls on line of Junction of adjoining lands.

Form F—Walls or Fence Walls on Building Owner's land with footings and foundations projecting into adjoining Owner's land.

Form G—Selection of Third Surveyor.

Price 7*d*. per form (inclusive of purchase tax): Postage 3*d*.

Prizes and Studentships (Pamphlet)

Price 2*s*. 6*d*. Postage 6*d*.

Tender, Form of, for use by Nominated Suppliers

Price 2*d*. per form. Postage 3*s*. 2*d*. per dozen (post free).

BOARD OF ARCHITECTURAL EDUCATION

R.I.B.A. Ashpitel Prize, 1957. Leslie Stephen Fairweather [*Student*, R.I.B.A.] of 25 Malling Down, Lewes, Sussex, who passed the Final Examination in June 1957, obtained the highest number of marks in the examination held in 1957 and has therefore been awarded the Ashpitel Prize.

Mr. Fairweather, who is 28 years of age and was elected a Student, R.I.B.A., in July 1948, received his architectural training at the Department of Architecture, Brighton College of Art and Crafts.

R.I.B.A. Sir Banister Fletcher Prize, 1957. John Ward of 106 Addison Road, Coventry, who passed the R.I.B.A. Intermediate Examination in November 1957, obtained the highest number of marks in the Intermediate Examinations held in 1957 and has therefore been awarded the Sir Banister Fletcher Prize.

Mr. Ward, who is 20 years of age, received his architectural training at the Department of Architecture, Coventry College of Art.

COMPETITIONS

Civic Centre, Ipswich. Last date for submitting designs in the preliminary stage: 25 August 1958.

Full particulars were published in the JOURNAL for March, page 173.

Design of Wooden Office Furniture. Last date for submitting designs in the first stage: 29 August 1958.

Full particulars were published in the JOURNAL for March, page 173.

ALLIED SOCIETIES

Changes of Officers and Addresses

Devon and Cornwall Society of Architects, Truro Branch. Chairman, Harry Dootson [*A*].

Essex, Cambridge and Hertfordshire Society of Architects. Hertfordshire Chapter. Hon. Secretary, T. A. Sutcliffe [*F*], 47 Whitehall, London, S.W.1.

Southport Architectural Society. Hon. Secretary, J. F. Davies, A.R.I.C.S. [*L*], Barclays Bank Chambers, 353 Lord Street, Southport.

Saskatchewan Association of Architects. President, John C. Webster, 209 C.P.R. Building, Saskatoon, Saskatchewan, Canada. Change of address of the Secretary, G. J. Berry, to 2502 Munroe Avenue, Saskatoon, Saskatchewan, Canada.

Federation of Malaya Society of Architects. Hon. Secretary, H. I. Ashley [*A*], P.W.D., Kuala Lumpur, Malaya.

Glasgow Institute of Architects. Annual Dinner and Dance. The Institute's annual dinner and dance was held at the Grosvenor Restaurant, Glasgow, on Wednesday 19 February 1958. The President, Mr. Thomas S. Cordiner [*F*], was in the chair and the R.I.B.A. was represented by Mr. Basil Spence, O.B.E., A.R.A., A.R.S.A., Honorary Secretary, and Mrs. Spence, and the Secretary, Mr. C. D. Spragg, C.B.E. Among the guests were Mr. Thomas H. Thoms [*F*], President of the Royal Incorporation of Architects in Scotland, and the Secretary, Mr. Kenneth Macrae, B.A., LL.B., W.S.; Professor William J. Smith, M.C., F.S.A. [*F*], of the Glasgow School of Architecture; Sir Ian F. C. Bolton, K.B.E., H.M.L., LL.D., J.P., C.A., the Lord Dean of Guild; and Mr. J. W. Gordon Barr, F.R.I.C.S., Chairman of the Scottish Branch of the Royal Institution of Chartered Surveyors, and their ladies.

After the Loyal Toast there were short speeches by Mr. Cordiner, Mr. Spence and Mr. Thoms.

Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects. Annual Dinner and Dance. The Association's annual dinner and dance was held at the Assembly Hall, R.A.F., Cardington, near Bedford, on Friday 21 February 1958. The President, Mr. Harold A. Rolls, F.R.I.C.S. [*L*], was in the chair, and the R.I.B.A. was represented by the President, Mr. Kenneth M. B. Cross and the Secretary, Mr. C. D. Spragg, C.B.E. Among the guests were Sir Frederick Mander, M.A., Chairman of Bedfordshire County Council, the Mayor of Northampton, Councillor F. P. Saunders, J.P.; the Mayor of Luton, Alderman S. C. Hayne, J.P.; and the Rural Dean of Dunstable, the Reverend J. J. Scammell, A.K.C.

The toast of the R.I.B.A. and the Allied Societies was proposed by Sir Frederick Mander and was responded to by Mr. Cross. Mr. Rolls proposed the toast of The Guests and Councillor Saunders and Alderman Hayne replied.

Mr. Cross also presented the R.I.B.A. Bronze Medal for Architecture to Mr. R. Llewelyn Davies [*F*]. There was an exhibition of photographs and drawings of work for which architects of the Association had been responsible, including photographs of the Nuffield Diagnostic Centre for which the Award had been made.

Northern Architectural Association. R.I.B.A. Architecture Bronze Medal. The R.I.B.A. Bronze Medal will be awarded in respect of a building erected in the area of the Northern Architectural Association during the three years ending 31 December 1957.

The area includes the counties of Northumberland, Durham and Cumberland. Nominations should be made not later than 31 May 1958 on forms which may be obtained from the Secretary of the Association, 6 Higham Place, Newcastle upon Tyne, 1.

Sheffield, South Yorkshire and District Society of Architects and Surveyors. Annual Dinner and Dance. The Society's annual dinner and dance was held at the Royal Victoria Station Hotel, Sheffield, on Thursday 27 February 1958. Mr. S. E. Shepherd, F.R.I.C.S. [*L*], Vice-President of the Society, presided in the unavoidable absence of the President, Mr. H. B. S. Gibbs [*F*]. The R.I.B.A. was represented by Mr. Leonard C. Howitt, Vice-President, who was accompanied by Mrs. Howitt, and the Secretary, Mr. C. D. Spragg, C.B.E.

The toast of the R.I.B.A. and the Allied Societies was proposed by Alderman A. Ballard, C.B.E., J.P., Lord Mayor of Sheffield, and Mr. Howitt replied. 'The Guests' was proposed by Mr. Shepherd and Mr. Henry Foster, City Engineer and Planning Officer, replied.

GENERAL NOTES

Architects' Christian Union. The next quarterly meeting will take place at the R.I.B.A. on Wednesday 16 April at 7 p.m. and will be preceded by refreshments at 6.30 p.m. The speaker on this occasion will be Montague Goodman, F.R.G.S.

World Family Congress, Paris 16–21 June, 1958. The International Union of Family Organisations are holding their Congress in Paris in June of this year. One of the subjects to be discussed is the importance of housing for the family unit. The Union have asked the I.U.A. to collaborate with them in this aspect of the Congress and the Housing Commission of the I.U.A. have been in touch with all National Sections to find out which architects are hoping to attend this Congress with a view possibly to arranging a preliminary meeting, when the architect's contribution to the discussions could be considered.

The work to be undertaken by the Study Group, who will deal with family housing, will touch on the problems of slums and overcrowding and the various aspects of an enlightened policy for family housing—adequate town planning, the proper uses of dwelling space, the correct assessment of housing costs and the relation of housing costs to the family budget. The Study Group will also consider the housing problems of rural communities.

Further information can be obtained from M. Jean Delaporte, 28 Place St. Georges, Paris IX, France.

Any architects who are thinking of attending the Congress are asked to inform the Secretary, United Kingdom Committee, I.U.A., 66 Portland Place, London, W.1.

The Highway Needs of Great Britain. The Proceedings at the Conference on the 'Highway Needs of Great Britain,' held at the Institution of Civil Engineers from 13–15 November 1957, have been published in booklet form (312 pp.) and are available from the Institution, Great George Street, Westminster, S.W.1, price £2, post free.

Worshipful Company of Tylers and Bricklayers, Triennial Award. 1958 is the year of the Triennial Award made by the Company of gold and silver medals to the architect and the foreman bricklayer respectively of the building completed within the last three years, selected as the best example of the use of brick and tile in the London area, that is, within 10 miles of Charing Cross.

There are no limits of size and type of building or of its architectural character, but what is sought is the successful use of the traditional materials in present-day circumstances.

The adjudicators are Sir Giles Gilbert Scott [*F*], Sir Edward Maufe [*F*], and Mr. R. H. Uren [*F*].

Nominations accompanied by one photograph are invited by the Company and must be received by the Clerk of the Company, 6 Bedford Row, W.C.1, by 28 April.

Rees Jeffreys Triennial Lecture. The Council of the Town Planning Institute has invited Mr. G. A. Jellicoe, M.T.P.I., P.P.I.L.A. [*F*], to give the Rees Jeffreys Triennial Lecture. Mr. Jellicoe's subject will be 'Motorways—their

Landscaping, Design and Appearance,' and the lecture will be given at the Institution of Civil Engineers, Great George Street, Westminster, on 9 October 1958 at 5.30 p.m. (tea will be served at 5 p.m.). Admission is free.

Truscon Travelling Scholarship. The Trussed Concrete Steel Co. Ltd. of Lower Marsh, London, S.E.1, offer a Travelling Scholarship of £125 to enable an Associate of the R.I.B.A. to undertake a continental tour of about three weeks' duration. The winner will be accompanied by a member of the company's technical staff awarded a similar scholarship, and they will jointly study reinforced concrete work on the Continent of Europe with particular reference to the collaboration between architect and engineer. A joint report will be prepared, the use and copyright of which will remain at the disposal of the Trussed Concrete Steel Co. Ltd.

Applicants must be under 35 years of age on 1 April 1958. No form of entry is required but applications should systematically cover the following particulars: (*a*) Age; (*b*) Architectural education and any distinctions; (*c*) Present employment and general practical experience; (*d*) Evidence of special interest in the use of reinforced concrete in contemporary architecture; (*e*) Languages spoken and previous travel abroad; (*f*) The names of two referees.

The selection will be made by a Committee consisting of Mr. C. S. White [*F*], Mr. G. Grenfell Baines, A.M.T.P.I. [*A*], and a Director of the Trussed Concrete Steel Co. Ltd. The Committee will prepare a short list based on written applications and will interview candidates on this list.

Applications should be received by the Secretary, The Trussed Concrete Steel Co. Ltd., Lower Marsh, London, S.E.1, by 2 June 1958.

Ford Foundation. English-Speaking Union Travel Grants 1958–59. The English-Speaking Union announces the offer of four travel grants to the United States, application for which is open to men and women of British nationality, aged between 30 and 50, who are experienced and practising in a branch of the arts such as painting, sculpture, music, architecture or design.

Each grant will cover the cost of travel to and from the United States and travel within that country. There will also be a subsistence allowance for each day spent in the United States, up to a maximum of 70 days, the recommended length of the visit.

The grant may be taken up any time after mid-September 1958, but must be completed by 30 June 1959.

Further particulars and application forms are obtainable from the Secretary, The English-Speaking Union, 37 Charles Street, Berkeley Square, London, W.1.

United Nations Seminar on Playground Activities and Leadership, Bergendal, near Stockholm, 26 May–7 June 1958. A limited number of places to attend the above Seminar, which will deal among other things with the provision of playgrounds in urban planning, have been allotted to the United Kingdom. Applications are invited from architects and town planners.

Further details are obtainable from the National Council of Social Service, 26 Bedford Square, London, W.C.1, and application forms have to be returned to that address by 11 April 1958.

R.I.B.A. Golfing Society. The R.I.B.A.G.S. played the Cambridge University Stymies at Denham on Sunday 2 March 1958. The match resulted in one of the closest games that the Society has played for some time, with the University team finally winning by eight matches to seven.

Notes from the Minutes of the Council

MEETING HELD ON 4 MARCH 1958

Appointment of R.I.B.A. Representatives

(*a*) *R.I.B.A. Architecture Bronze Medal: Northern Architectural Association: Jury to consider Award for three-year period ending 31 December 1957.* J. A. H. Mottram [*A*], President, Edinburgh Architectural Association.

(*b*) *Electrical Association for Women: National Advisory Council.* Miss Elizabeth Denby [*Hon. A*].

(*c*) *Registered Plumbers Association: Annual Meeting of General Council, Bristol, 13 June 1958.* E. F. Tew [*F*], President, Bristol and Somerset Society of Architects.

(*d*) *Codes of Practice Committee for Civil Engineering.* George Newell [*A*].

(*e*) *Codes of Practice Committee for Mechanical Engineering.* H. H. Clark [*F*].

R.I.B.A. Award for Distinction in Town Planning. The Council approved a recommendation that the R.I.B.A. Award for Distinction in Town Planning be conferred upon: Anthony Minoprio [*F*]; Professor Gordon Stephenson [*F*]; J. Lewis Womersley [*F*].

Completion of Premises Fund. It was reported that a donation of £3 to the Completion of Premises Fund had been received from Mr. Harry Barrett [*A*] (U.S.A.). The Council's appreciation was expressed by the Chairman of the Finance and House Committee.

Membership. The following members were elected: as Fellows 9; as Associates 254.

Students. 91 Probationers were elected as Students.

Applications for Election. Applications for election were approved as follows: *Election 6 May* 1958: as Honorary Fellow 1; as Fellows 6; as Associates 37. *Election 8 July* 1958 (*Overseas Candidates*): as Fellow 1; as Associates 10.

Applications for Reinstatement. The following applications were approved: as Associates: Richard Anthony Kayll, Alfred Llewellyn Priest, John Humphrey Spender, Ernest William Waldron. As Licentiate: Cecil Thomas George Ducret.

Resignations. The following resignations were accepted with regret: John Graham Guest [*A*], Mrs. Elizabeth Renwick [*A*], Thomas Anthony Snow [*A*].

Applications for Transfer to Retired Members' Class under Bye-law 15. The following applications were approved: as Retired Associate: William Alexander Morris. As Retired Licentiates: Ernest Dawson, Harold Arthur James.

Obituary. The Secretary reported with regret the death of the following members: Dr. Riki Sano [*Hon. Corr. Member*], Hugo Ritchie Bird [*F*], William Peter Horsburgh [*F*], John Burgess Surman [*F*], Edward Thomas Allcock [*Retd. F*], Francis John Humphry [*Retd. F*], Alfred Young Mayell [*Retd. F*], Arthur John Stedman [*Retd. F*], George Hatherley Alsop [*A*], Barry Partridge [*A*], James Straton-Ferrier [*Retd. A*], Robert Burke [*L*], Eustace Herbert Edwards [*L*], Thomas Tatam [*L*], James Wilkie Weddell [*L*].

By resolution of the Council the sympathy and condolences of the Royal Institute have been conveyed to their relatives.

Obituaries

Hugo Ritchie Bird [*F*] died on 7 February 1958, aged 78.

Mr. H. H. Dawson [*F*] writes:

'Mr. Bird was a native of Ipswich, and was educated at Framlingham. He was articled to Messrs. Gibson and Russell [*F*], assistant to Mr. C. J. Dawson [*F*], and for over 50 years had been in practice at Brentwood, Essex.

'His work consisted of country houses, hospitals and other public buildings, outstanding of which are the Brentwood District Hospital and Merry Meade.

'He was a past member of the R.I.B.A. Council and had served for many years on the Licentiateship Committee and also on the Allied Societies' Conference, and the Professional Conduct, Public Relations, Unification, Unification and Registration Committees. He was a past President of the Essex, Cambridge and Hertfordshire Society of Architects and a past Chairman of the Society's Chelmsford Chapter.

'He had a likeable and friendly personality and took great interest in local affairs, having served as a churchwarden, member of the Brentwood Council, Billericay Board of Guardians, and as a founder of the Marlborough Dramatic Club. He was a keen and life-long Mason.'

John McLintock Bowie [*Retd. F*] died on 13 November 1957, aged 86.

Mr. Bowie received his training in the office of Messrs. Thomas Frame and Son of Alloa. He started private practice in Dumfries in 1896, entering into partnership with Mr. James Barbour.

The principal works with which Mr. Bowie was concerned were Comlongon Castle, Dumfriesshire, Lord Kensington's house, St. Bride's, South Wales, St. Joseph's College, Dumfries, and many country houses in the South of Scotland, churches and schools.

He acted as Burgh Surveyor for Maxwelltown before its amalgamation with Dumfries Burgh and had held the post of Dean of Guild for Dumfries Town Council.

Alfred Crampton [*F*] died on 20 September 1957, aged 74.

Mr. Crampton studied at Liverpool University and commenced private practice in Southport where he entered into partnership with the late G. S. Packer [*F*], who died in 1931. Together they were responsible for the printing works and newspaper offices for the SOUTHPORT VISITER. Other Southport buildings with which Mr. Crampton was concerned were the Synagogue, the Christian Science Church, Broadbents, Chapel Street, and the Sunshine Home for Blind Babies at Birkdale, which was damaged in an air raid during the last war and later rebuilt.

William Henry Dark [*Retd. L*] died on 19 September 1957, aged 72.

Since 1919 until his retirement in 1951, Mr. Dark was in the architect's department of Messrs. Lipton, Ltd., London, and for about twenty years had been their chief architect, responsible for all the company's shops and stores, etc., in Great Britain.

He was a Fellow of the Ancient Monuments Society and had been honorary curator since 1931 of the Allied Suppliers' Museum, where articles discovered and excavated at their properties from Dublin to London are on view. Many of the exhibits were discovered by Mr. Dark.

Reginald James Evans [*Retd. L*] died on 15 November 1957, aged 60.

Mr. Evans trained with Messrs. Thornley, Rooke and Barron of Plymouth and in 1937 became a partner in the firm of Barron, Rooke and Partners. In 1946 he went into partnership with one of the partners, Mr. H. J. Sloggett [*L*], as Evans and Sloggett. He retired in 1951.

The principal works with which Mr. Evans was concerned were a housing scheme for Torpoint U.D.C., and in the Plymouth area, a private housing estate for Sutton Dwellings Trust at St. Budeaux, a Methodist Church at Higher Compton, a church for the Plymouth Brethren at Ford Park, a warehouse and offices for the Walpamur Co. Ltd., and a shop for Town Tailors Ltd.

John Heamans Johns [*L*] died on 10 September 1957, aged 47.

Mr. Johns studied at the School of Architecture, Plymouth Technical College, and was articled to Messrs. S. W. Haughton and Son [*L*] of Plymouth. From 1937 to 1945 he was in the office of the Superintending Civil Engineer, Portsmouth, and from 1945 to 1950 Principal Assistant Architect to the City Council. In 1950 he left Portsmouth to become Chief Assistant Architect to Havant and Waterlooville U.D.C. He also had a small private practice.

He had had responsibilities in connection with Havant's post-war housing programme, including Doyle House, the old people's home at Bedhampton.

Mr. Johns was an accomplished wood carver and designed a wall plaque for the council chamber at the Town Hall and furnishings for local churches.

John Norman Keasley [*A*] died on 13 November 1957, aged 76.

Mr. Keasley was one of the earliest pupils of Sir Albert Richardson [*F*] at London University. He was articled to Mr. Latham A. Withall [*F*] and commenced private practice in London in 1907. When the First World War started he was pronounced medically unfit for military service and he went on munition work for Vickers' at Crayford. After the war he set up practice in his native town of Reigate. He had much to do with the planning of local housing and business development there. He was also concerned with the development of a new estate at Worthing.

For many years he was a director of the Holmesdale Building Society, of which he became vice-chairman, and up to his last illness he was actively engaged as the Society's senior valuer.

Ernest Charles Leach [*F*] died on 20 November 1957, aged 61.

After serving his articles with a London architect, Mr. Leach joined the Cunard Steam-Ship Company Ltd., in 1912. He was appointed assistant furnishing superintendent in 1923, furnishing superintendent six years later, and in 1952 chief furnishing superintendent and decorative architect.

During the First World War Mr. Leach served in France and Belgium with the Machine Gun Corps and the Royal Engineers.

Mr. Leach was concerned with the decorative planning of the *Queen Mary* and *Queen Elizabeth*, and in 1940 sailed on the latter's secret maiden voyage and then worked on her conversion to a troopship in Singapore and Sydney. He later worked on troopship conversions in the United States. His post-war work included the design of the passenger accommodation for the Cunard White Star liner *Caronia*.

Sydney Walter Lucas [*A*] died on 11 February 1956, aged 52.

His wife, Mrs. E. M. Lucas, has sent us the following brief outline of Professor Lucas's career:

'He trained at the Sydney Technical College whilst serving articles with Messrs. Tate and Young. He then worked in various private offices until 1927 when he joined the Government Architects Branch in New South Wales and in 1936 the Works and Services Branch of the Commonwealth Department of the Interior. Promotion came quickly and the heavy wartime building programme in which speed was so vital, proved a testing ground for his architectural ability such as is seldom experienced. He controlled large architectural staffs on all types of building groups finally concentrating on Royal Australian Navy works, particularly in the development of Garden Island when the Captain Cook Dock was being constructed.

'Having become, in the post-war years, Superintendent of Design directly controlling the large architectural staff in the New South Wales Branch of the Commonwealth Works Department, it was characteristic of his outlook that, following a trip overseas, he should decide to try to become a teacher of architecture, and to achieve this objective he joined the staff of the New South Wales University of Technology in 1954 as Associate Professor of Architecture.

Albert Quin Muras [*L*] died on 8 July 1957 aged 53.

Mr. Muras received his training in the office of Messrs. J. Oswald and Son [*F*] of Newcastle upon Tyne, and he remained with the firm until 1935 when he set up in practice on his own account in Newcastle. After army service during the Second World War he returned to his practice. Since 1948 he had been employed by the Architectural Department of Messrs. Vaux, a firm of brewers in Sunderland.

His principal works were the Benwell Park and Coast Road private housing estates in Newcastle and private blocks of flats, shops and business premises also in Newcastle and at Whitley Bay.

Legender William Myers, F.R.I.C.S. [*L*] died on 1 January 1958.

Mr. Myers was articled to the late Arthur Vernon, F.S.I., at High Wycombe. After working in surveyors' and architects' offices in Cambridge, he decided to establish his own office in his native town of Beaconsfield in 1905, when he became concerned with the late Jas. and Wm. Gurney on the development of the Orchehill Estate at Gerrards Cross and subsequently with the Gregories Estate at Beaconsfield. In 1906 Mr. L. P. Kerkham and Mr. J. G. Burgess [*L*] joined him in partnership, though shortly after Mr. Kerkham withdrew and he was replaced by Mr. W. F. C. Holden [*F*], and the firm was eventually styled Burgess, Myers and Holden. Mr. Myers was the surveyor of the firm.

During the First World War Mr. Myers, being over age for the army, joined the Ford Motor Company at Brook Green, Hammersmith, where he became Assistant London Manager and was in charge of War Office deliveries. After the war he resumed practice, this time on his account, at Gray's Inn Square, London. He later worked on the quantities for all the National Provincial Banks under Mr. F. C. R. Palmer [*F*] and after the latter's death for Mr. Holden.

During the Second World War he was appointed to the Ministry of Works as an Emergency Works Officer. He returned to his office in Gray's Inn Square after the war, where he remained until retirement in 1954.

Mr. Myers was a successful amateur actor. He was also a keen Freemason, and attained Grand Rank.

His wife, Mrs. D. Myers, writes:

'All who knew him loved him for he was invariably ready to give of his utmost in help and advice. Patience, understanding and kindness of heart were fundamental with him. Without exception he always saw the best in his fellow creatures.'

Bernard Newboult [*A*] died on 30 October 1957, aged 64.

Mr. Newboult studied at the Liverpool School of Architecture and joined Mr. Eric Morley, F.R.I.C.S. [*F*] in partnership in the firm of W. J. Morley and Son in Bradford in 1952. Mr. G. A. Keighley [*A*] was taken into partnership in 1954.

Janardan Ganesh Patki [*F*] died on 28 July 1957, aged 57.

Mr. G. B. Kshirasagar, Secretary (Retired) of the Department of Architecture, of the Sir J. J. School of Art, Bombay, writes:

'Mr. Patki received his architectural training at the School of Architecture of the Sir J. J. School of Art and obtained the Diploma in 1930. Prior to setting up in joint private practice with Mr. M. K. Jadhav [*F*] and Mr. G. S. Dadarkar [*F*] in 1931, under the style of Patki, Jadhav and Dadarkar, he gained practical experience as an assistant with Messrs. Simon and Co. and was for some time in the office of the late D. W. Ditchburn [*F*], a Past-President of the Indian Institute of Architects. The firm has been styled Patki and Dadarkar since the appointment of Mr. Jadhav in 1941 as State Architect to the then Baroda State now merged in the Bombay State.

'A prominent member of the Indian Institute, Mr. Patki was an examiner from 1946–47 on the R.I.B.A. Examination Board in India. He was elected an Associate of the R.I.B.A. in 1938 and a Fellow in 1955.

'The office of Patki and Dadarkar, during the course of over a quarter of a century, have had an extensive and busy practice throughout India. Among the principal works with which Mr. Patki was concerned were the school and chapel for Don Bosco at Matunga, and the 'Industry House' office building in Bombay and the factory of Tungabhadra Industries Ltd., at Kurnool Town, Andhra, South India, both for Messrs. Birla Brothers.

'Business acumen and administration were Mr. Patki's forte and his advice and suggestions were valued both by clients and contractors, by municipal and governmental authorities. By temperament he was reserved but possessed a sympathetic disposition. Recently he had been with his wife on a short tour of the Continent and the United Kingdom.

'One of his sons, Mr. Y. J. Patki [*A*] has now joined Mr. Dadarkar, who is continuing the practice under the same style, as a junior partner.'

Geoffrey William Ridley, O.B.E. [*F*] died on 30 December 1957, aged 70.

After studying at King's College, London University, Mr. Ridley was articled to Mr.

Arthur Marshall [*A*] of Nottingham from 1906–9, and became an assistant to Mr. W. D. Caröe [*F*] of Westminster in 1911. In 1912 he entered into partnership with Mr. Douglass Mathews [*F*] in East Grinstead. They transferred to London as Mathews, Son and Ridley in 1921. From 1938–40 he was in partnership with Mr. B. W. Ridley [*A*] as G. and B. Ridley, at Haywards Heath, finally settling in Dover in 1945. Mr. B. W. Ridley has now taken over the practice.

Mr. Ridley was concerned with the restoration of historic buildings, including Cromwell House and Clarendon House, East Grinstead. He had also been engaged on the rebuilding of the Congregational Church at Dover, and on village halls at Longport, Canterbury, and Woodchurch, Kent, and barn theatres at Oxted and West Hoathly, as well as on much domestic architecture. He contributed the section on 'Architecture and Town Planning' in *Twelve Studies of Soviet Russia*, published in 1933 for the New Fabian Research Bureau.

Mr. Ridley had had a distinguished army record in the First World War, serving at Gallipoli and on Allenby's staff in Palestine and Syria as D.A.A.G. of the 20th Corps, for which he was awarded the O.B.E. (Military Division) and the Egyptian Order of the Nile. He had also been prominent in local government, and had seen 18 years' service in Sussex with the R.D.C.'s of East Grinstead and Cuckfield and as a Justice of the Peace. From 1955–56 he was Master of the Worshipful Company of Carpenters and had been Chairman of the Rebuilding Committee of the new Carpenters' Hall.

Matthew Cromarty Robson [*L*] died on 30 December 1957, aged 73.

We are indebted to his son Mr. R. W. Robson [*L*] for the following notes:

'Mr. Robson started a practice in Bishop Auckland in 1906 and was active until a few years before his death.

'His work included housing, amongst which were 400 post-war houses for Bishop Auckland U.D.C. and 600 houses in Newton Aycliffe New Town, shops, licensed premises, cinemas and factories. He was chairman of Bishop Auckland U.D.C. in 1925 and of the Tees-Side Branch of the Northern Architectural Association in 1932.

'In 1946 Mr. R. W. Robson was taken into partnership and the practice will continue under the same style of Matt. C. Robson and Son at Station Chambers, Bishop Auckland, Co. Durham.'

Colin Sinclair [*F*] died on 26 October 1957, aged 78.

Dr. Sinclair was educated at Bellahouston Academy and at Glasgow University where he graduated and was later awarded a Ph.D. for a thesis on 'Celtic Art in Architecture'. He received his architectural training in the office of Messrs. H. and D. Barclay [*F*] and in 1917 went into partnership with Mr. John B. Campbell in Glasgow. Since 1940 he had practised on his own account.

Among his principal works were the Royal Technical College, Glasgow, and Jordanhill Training College and Croftfoot School, also in Glasgow, the Town Hall and the James Watt Memorial School at Greenock, housing schemes at Bishopbriggs, Inveraray, Tobermory, and Lochgilphead, and the designs for the Highland clachans at the Glasgow Exhibitions of 1911 and 1938.

Dr. Sinclair was the author of *The Thatched Houses of the Old Highlands* and of a booklet on 'Notes for Students of Building Construction'. He was also a painter of ability in water colours and oils and the composer of several original melodies. He had been a delegate to UNESCO since 1947.

David Thomson [*Retd. F*] died on 16 October 1957, aged 77.

After serving his articles with Mr. Campbell Douglas [*F*] of Glasgow, Mr. Thomson held various positions with architectural firms in Perth and Brighton before joining H.M. Office of Works. He was later appointed a Senior Architect with the Ministry of Works. Mr. Thomson was awarded the M.B.E. in 1920.

John Stewart Thomson [*F*] died on 23 November 1957, aged 64.

Mr. Thomson studied at Battersea Polytechnic and served his articles with his father Mr. R. J. Thomson [*F*]. During the First World War he served with the London Scottish 1st Battalion and was later commissioned in the Royal Artillery. In 1920 he returned to his father's office in Wimbledon as an assistant and four years later was taken into partnership. After his father's death in 1937 he continued the practice on his own account. Mr. Duncan Thomson [*L*] (no relation) has now taken over the practice.

His work included housing, industrial buildings, hospitals and licensed premises.

Leonard Walter Tracey [*A*] died on 9 November 1957, aged 74.

Mr. Tracey received his training at the Birmingham School of Architecture and as an assistant to various architectural firms in Birmingham. Starting private practice in 1929 he entered into partnership with Mr. E. G. Harrison. Mr. J. W. O. Harrison [*A*] and Mr. T. J. Coton [*A*] are now continuing the practice of E. G. Harrison and Tracey.

Mr. Tracey's work included factories, public houses, churches and church halls, and domestic architecture.

Laurence Arthur Turner, F.S.A. [*Hon. A*], died on 4 October 1957.

Mr. Turner was the seventh son of the late Rev. J. R. Turner, sometime Rector of Wroughton, Wilts. He was educated at Marlborough and was articled to Mr. John MacCullock for five years. With much help and encouragement from his two elder brothers, H. Thackeray Turner [*F*] and Hawes Turner, painter, he began to establish for himself an outstanding reputation as a craftsman in the use of stone, wood and plaster. He worked in close co-operation with many of the leading architects during the first half of the century.

From the great volume of work produced by Mr. Turner should be mentioned wood and stone carving and decorative plaster work in Rhodes House, Oxford, and Church House, Westminster; internal plaster and wood carving at Africa House, Trafalgar Square; stone and wood carving at Downing College, Cambridge, Woldingham Church, and Bishop Jacob Church, Ilford; coloured heraldry and symbols, lettering and stone carving for Winchester Memorial Cloisters; and the carved oak pulpit, altar table and the fibrous plaster chancel ceiling in St. Thomas's Church, Upshire, Essex. Mr. Turner retired from active work about five years ago.

He was Master of the Art Workers Guild in 1922, and he was the author of *Decorative Plasterwork in Great Britain*, published in 1927. He had a lifelong interest in Freemasonry and he was a Past-Master of the Arts Lodge and of the Old Marlburian Lodge, as well as holding office in Grand Lodge.

Thomas Tyrwhitt [*Retd. F*] died in the Canary Isles on 13 August 1956, aged 82.

Mr. Tyrwhitt, who was a pupil of Sir Aston Webb, P.P.R.I.B.A., and a student of the Architectural Association, was Institute Medallist (Drawings) in 1898. He started personal practice in 1900, practising in Hong Kong from 1902 to 1904 and in Pretoria, South Africa, from 1904 to 1907. Whilst in Pretoria he was architect to the Public Works Department of the Transvaal, and his work included schools, post offices and other Government buildings. In 1908 he returned to London where he remained in private practice, apart from a year's appointment as superintending architect to the Ministry of Agriculture and Fisheries in 1919, until his retirement in 1935.

Mr. Tyrwhitt specialised in country houses and farm cottages. His work included Rudge Hill House, Glos., six cottages at Scotsgrove, and Houlton Heath House, Newmarket. He was also responsible for the Indian Memorial Gateway at the Royal Pavilion, Brighton.

Percy James Westwood, O.B.E. [*Retd. F.*] died on 24 January 1958, aged 79.

Mr. Westwood was educated at the A.A. Schools, where in 1899 he won the medal and studentship (lectures). Among his earlier works were a factory for Messrs. Bryce and Weston at Londonderry and branch premises for Austin Reed Limited. In 1922 he went into partnership with Mr. J. Emberton [*F*], and with him he continued his work on Austin Reed branch shops in Leeds, Liverpool and Sheffield, and in particular in London in Kingsway, Cheapside, the Quadrant in Regent Street (also with Sir Reginald Blomfield [*F*]), and Summit House, the firm's offices and warehouse, in Red Lion Square. Other joint works included Messrs. Daniel Neal's premises in High Street, Kensington, and housing in the Weybridge district. The partnership was dissolved in 1926.

His work since then has included premises for Rowans Limited, Birmingham, Austin Reed premises in Norwich and Manchester and on the S.S. *Queen Elizabeth*, and, in partnership with his sons Bryan Percy Westwood [*F*] and Norman Charles Westwood [*F*], Brookfield Court at Bexhill, Sussex (with Hugh H. Ford [*F*]), and the research buildings at Greenhithe for the Associated Portland Cement Manufacturers. The firm were placed second in a competition for a standard ticket and parcels office for British Railways (1936) and Consett Town Hall (1938), and won the competition for the Building Centre, Shopfront (1939) and, with Edmund Ward [*A*], the Godalming Civic Centre (1939). His sons are now continuing the practice of Westwood, Sons and Partners.

Mr. Thomas Rayson [*F*] writes:

'With the death of Percy James Westwood the profession has lost a skilful architect and I, a dear friend. He was the embodiment of gentleness. He could be firm, but never unreasonably insistent.

'His name always brings to mind the wonderful charcoal drawings which he made of bombed sites in London. Many London exhibitions of water-colours or pastels were enriched by his contributions. His collection of water-colours and mezzotints was well known, and frequently entertained him and his friends. His views as a professional architect were progressive although he had much sympathy with traditional building. He loved to meander around the Cotswold villages of which he made many drawings and paintings.

'A great quality which he had was that of humour. Never was it coarse or in bad taste.

He knew his company, and although he could perceive the funniest point of an incident, his gentle expression of it always tended to accentuate its humorous quality.

'He leaves a widow and a family of four brilliant sons, two of whom, Bryan and Norman, are now responsible for his architectural practice. Norman, like his father is a conspicuous water-colourist. Peter is a quantity surveyor, and Colin a photographer. All four and their father were "pals" together—a situation for which both parents must be given credit.

'His works included premises for Austin Reed, for Daniel Neal, Goochs' and other big London stores, branch premises for Austin Reed, a factory in Londonderry and showrooms and offices in Glasgow.

'The loss of this wise and gentlest of counsellors will be felt for many years to come.'

Peter Gordon Williams [*A*] died on 26 September 1957, aged only 29.

Since graduating from Sheffield University, Mr. Williams had been employed in the City Architect's Department in Hull and in the Borough Architect's Department in Derby, and by Messrs. W. S. Hattrell and Partners [*F*/*A*] of Coventry. He had only recently joined Messrs. Basil Spence and Partners [*F*/*A*], in Edinburgh, when he died.

Mr. Williams was awarded Sheffield University's Sir H. K. Stephenson Travelling Fellowship in Architecture in 1954.

Norman Frederic Woodroffe, O.B.E., T.D., F.R.I.C.S. [*F*] died on 22 November 1957, aged 66.

Mr. J. W. Buchanan, A.M.T.P.I. [*F*] has supplied the following notes:

'Mr. Woodroffe was educated at Malvern. He attended the Architectural Association School from 1909–11, at that time a two-year course. Following the A.A., he studied at the Beaux Arts, Paris, from 1913–14. He joined his father's firm, W. H. Woodroffe and Son [*F*], in Bedford Row, W.C.1, in 1919.

'During the First World War he served in the Queen Victoria's Rifles and was wounded in the battle of Hill 60 in 1916. After a Staff College Course, he saw service in Palestine and Egypt and was awarded the O.B.E. In 1940 he again served in France as a Major in Q.M.G. Branch and for a period after the evacuation from France helped to form No. 4 Commando.

'He resumed practice after the war in Bedford Row and merged his practice with J. W. Buchanan, and H. G. Coulter, M.B.E., M.C. [*F*] in 1946.

'N. F. Woodroffe was appointed Surveyor to the London Diocese in 1946 and Surveyor to Haileybury and Imperial Service College in 1948.

'Among his pre-war works were Hamilton House, the National Union of Teachers' Headquarters in Marbledon Place, Euston Road, and John Groom's Crippleage at Hendon. His post-war works included Spurgeon's Homes at Birchington. He also did a number of new vicarages and other domestic and some industrial work.

'He was a keen Freemason, and was a past Grand Steward of the Order.

'His practice is being continued by his partners at 5 Bedford Row, W.C.1.'

Maurice Yendall [*L*] died on 13 November 1957, aged 57.

Mr. Yendall, who was the Chief Architect to the County Borough of Gateshead, was educated at Rutherford Technical College and Armstrong College, Newcastle upon Tyne and served his articles with Mr. Arthur Stockwell, F.S.A.

In his official capacity Mr. Yendall was concerned with much of the development in Gateshead, including the General Hospital, the Shipcote Swimming Bath, the Central Library, Civic Centre and Technical College, Dryden Road Girls' Grammar School and Barn Close Flats.

Membership Lists

ELECTION: 4 MARCH 1958

The following candidates for membership were elected on 4 March 1958.

AS FELLOWS (9)

Blackmore: John Wilfrid, A.A.Dipl. [*A* 1949], Hull.
Caldwell: James Edwin Lees, A.M.T.P.I. [*A* 1942], Watford.
Cusdin: Sidney Edward Thomas, O.B.E., A.A.Dipl. [*A* 1930].
Guise: John Bernard [*A* 1947].
Mallows: Edward Wilfrid Nassau, M.A. (Cantab.), A.A.Dipl., S.P.Dip., M.T.P.I. [*A* 1937], Johannesburg, S. Africa.
Meadley: Alan Rhodes, A.A.Dipl. [*A* 1935], Johannesburg, S. Africa.
Morrison: Samuel, T.D. [*A* 1948], Derby.
Smith: Frederick William Beresford, A.M.T.P.I. [*A* 1938], Bath.

and the following Licentiate who is qualified under Section IV, Clause 4(*c*)(ii) of the Supplemental Charter of 1925:—

Tutte: Alfred Ernest Victor, Southsea.

AS ASSOCIATES (254)

Alston: Herbert Knowles, Preston.
Amos: Brian Edward, Oxford.
Andrews: Peter, Beverley.
Babister: Bernard Albert William.
Bain: Andrew, Guildford.
Bainton: Peter Burton, Leeds.
Baker: Geoffrey Cassteels, Midhurst.
Barnes: John Frederick Laurence, Redcar.
Barry: James, Douglas, Cork.
Bath: James Arnold.
Baxter: Walter John, Romford.
Bedford: Alan Cedric, Great Missenden.
Bellamy: Thomas Arthur, Orpington.
Bennett: Wilfred, Dip.Arch.(Manchester), Stockport.
Bentley: Joe, Cleckheaton.
Bharucha: Bejan Ardeshir.
Bhonsule: Narayan Anant.
Bird: Paul Bernard, Cambridge.
Blake: Charles Hilary.
Blythe: Alan Cecil, Scarborough.
Bone: Alan Francis, Hove.
Bottomley: Keith, Keighley.
Bradbury: Francis William, Redditch.
Bradford: Stanley Wilbert, Walsall.
Bradley: John Ralph, Bradford.
Braim: Eric Lawrence, Doncaster.
Bray: Alan Kenneth, Hull.
Briggs: Harry Gordon, Oldham.
Brooks: Michael Anthony.
Brown: Francis Bruce, LL.D., M.Arch. (Toronto), F.R.A.I.C., Toronto, Ontario, Canada.
Bryan: Percival Charles Rex, Northampton.
Buckle: John Charles, Droitwich.
Burgess: George Brian, Stockport.
Burns: Eric Edward, Epping.
Burt: Roger George.
Butterworth: Norman Alan, Tilbury.
Calderhead: James Charles, Surbiton.
Caldwell: William David Morris, D.A.(Edin.).
Cantwell: Frank J., Blackrock, Co. Dublin.
Cassidy: Liam, B.Arch.(L'pool), Londonderry, N. Ireland.
Caswell: Philip Henry, Radlett, Herts.
Chung: Meng Soon, Auckland, New Zealand.
Clapham: (Miss) Jean Erica Shirley.
Collens: Geoffrey Alan, Dipl.Arch.(Leeds).
Combs: Harold, Manchester.
Cove: Roland Ernest, St. Albans.
Cowell: Philip Maurice, M.A.(Cantab.), Cambridge.
Czezowski: Jacek Stanislaw.
Dabrowski: Jerzy Henryk, Stratford-upon-Avon.
Darrington: Paul William James, Banstead.
Davey: Jack William.
Davis: Cecil Fenwick, Bushey.
Davis: John David Tremaine, A.R.I.C.S., Bexhill-on-Sea.
Davis: Kenneth Sidney Ansell, Croydon.
Deaves: Alan Roy.
Dees: Adrian Nigel, Hereford.
De Mott: Lionel Thomas, Southsea.
Dietz: John Edward Michael, Dip.T.P. (Dunelm), Gateshead.
Dixon: Thomas, Bromley, Kent.
Dobson: Victor, Windsor.
Dod: Kenneth Logan.
Dodgson: Granville Trevor, Leeds.
Dolman: Alan, Nottingham.
Douglas-Maul: Brian Alistair, Wakefield.
Dowling: Jack William, Warrington.
Downing: Clifford, Birmingham.
Downs: (Miss) Allison.
Dunster: Peter, Whitstable.
Edwards: Stuart Leonard.
Etherington: Thomas Gordon, Sunderland.
Evans: George Frederick Horace.
Evans: John David, Cardiff.
Farrance: Charles William.
Fisher: Alan, Aldridge.
Fisher: Henry Walter, Plymouth.
Fisher: James Houston, D.A., Dip.T.P.(Glas.), Glasgow.
Fisher: Sidney Roy, A.M.T.P.I., Chorley.
Fleming: Denis Harold, Bristol.
Forrest: Donald William.
Freak: Gerald Arthur, Bromley, Kent.
Fulton: William, Dip.Arch.(Dunelm), Stockton-on-Tees.
Gallimore: Arthur Kenneth, Congleton.
Gazzard: Donald.
Green: Norman.
Grinyer: Roy, Cheam.
Groves: Alan Joseph, Rickmansworth.
Grundy: Colin Bernard, Bolton.
Haddon: Peter Frank, Northampton.
Hadley: Keith, Chorlton-cum-Hardy.
Hammond: Peter Donald, Solihull.
Hammond: Peter Raymond Vere, Birmingham.
Hardy: Alan James, Westcliff-on-Sea.
Hartnell: Thomas Ronald.
Haskett: Albert Stephen Shaw, Ringwood.
Haughey: Patrick James, Prehen, Co. Derry.
Heath: Edward Barrie, Wakefield.
Heffer: Michael, Harlow.
Hewett: Alan Graham, B.A.(Arch.)(Lond.).
Higgins: Christopher Peter Henry.
Hill: Brian, Manchester.
Hindle: Gordon Denzil, B.Arch.(L'pool), Woodford Green.
Holborn: John, Dip.Arch.(Leics.), Peterborough.
Holliss: (Miss) Elisabeth Diana Mary, Emsworth.
Hood: Derek William, Dip.Arch.(Leics.), Leicester.
Hook: Roy Desiré Curtis, Bracknell.
Howard: Clive Francis.
Hughes: Thomas Riddell, Glasgow.
Hull: Alwyn, Huddersfield.
Hulls: Christopher Merlin, Warminster.
Humphrey: Colin Roger, Eastbourne.

Hussein: Messoud.
Ickeringill: Anthony John, Brighton.
Ingle: Ivor George James, Bridgwater.
Ioannides: Constantinos Philokyprou, M.C.D., B.Arch.(L'pool), Liverpool.
Jacoby: William.
Jameson: Peter, B.A.(Cantab.).
Jones: Roy, Upminster.
Jones: Sydney Douglas, Dip.Arch.(Nottm.), Derby.
Kay: Malcolm Joseph, Hull.
Keep: Maurice Basil.
Kenzie: Roy William, Tadworth.
Kirk: Malcolm Lister, Dipl.Arch.(Leeds), Cleckheaton.
Knowles: Kenneth Stanley, Chelmsford.
Lander: Sean Felix Polke, Dip.Arch.(The Polytechnic). St. Albans.
Large: Warwick Edgar, Wolverhampton.
Larkin: Gerald Douglas, Street.
Lawrence: Robert Henry, Southampton.
Lawson: Sydney Robert, Colchester.
Lincoln: Frederick, Woldingham.
Lloyd: Jeremy Sampson, M.A.(Cantab.).
Lock: Damond James.
Lucas: Anthony John, Dip.Arch.(Birm.), Birmingham.
Luetchford: Hugh.
Lynch: John, B.Arch.(L'pool), Liverpool.
Lynton: John Arthur, Brighton.
McDougall: Jack Craig, Glasgow.
McGrath: James Malcolm, Southport.
McGurk: Thomas, South Shields.
McLaren: Donald Philip, Timperley.
Maidment: (Miss) Delphine Patricia Katherine, Dip.Arch.(Cardiff), Bristol.
Malcolm: Thomas Julian, Middlesbrough.
Malton: John Victor, Grays.
Mannings: Michael John.
Maplestone: Keith Murray, Dip.Arch.(Cardiff), Cardiff.
Marriott: Kenneth Weston, B.Arch.(L'pool), Liverpool.
Marshman: Arthur Albert John, Overstone.
Martin: John Hubert, Eastbourne.
Massey: Harry, Dip.Arch.(Dunelm), Consett.
Matten: Duncan Newton, Kingswinford.
Maunder: Peter Lewis.
Melhuish: Nigel Donner, B.A.(Cantab.).
Michael: Anthony David, Ashford, Kent.
Michaelian: Haikaz.
Michelmore: Richard Alfred, Walton-on-Thames.
Mills: Brian Donald, Dip.Arch.(Birm.), Walsall.
Milner: John, Bleasby.
Mohe: Ramesh Vishnoo.
Morrow: Nicol Stuart.
Moss: Bernard Frank.
Murkin: Norman Dennis Albert, Ifield.
Muszynski: Jan, Polish Cross of Valour, Edinburgh.
Mutter: John, Paignton.
Naylor: Benjamin Peter, Liverpool.
Neale: Norman William, Street.
Newin: Mervyn Humphrey, Devoran.
O'Keeffe: Patrick, Maidstone.
Orrin: Roy Alfred William, Colchester.
Osborne: Henry Alfred, Dipl.Arch.(U.C.L.), Wanstead.
Packer: Ronald James, Putnoe.
Pate: James Guy Lindsay, East Kilbride.
Patkar: Laxmikant Ramchandra.
Pearson: James Edgar Thomas, Birmingham.
Pepper: Alfred Edward John, M.C., B.Sc., A.M.I.C.E., Worcester.
Pestell: Laurence Derek, Bromley, Kent.
Peters: Alwyne Pelham, Leeds.
Pickering: Alan, Walsall.
Pike: John Douglas: Dip.Arch.(Nottm.), Nottingham.
Pink: Geoffrey Michael, Knebworth.
Plunkett: Michael, Dipl.Arch.(U.C.L.).
Portsmouth: John Hugh Spencer, Swansea.
Pratt: John Trevor, Matlock.
Preston: James Ronald, Coventry.
Pritchard: William Joseph, Liverpool.
Purcell: William Vernon, Carshalton.
Purves: Andrew Moffatt, D.A.(Edin.), Edinburgh.
Pye: John Robert.
Rahim: Mohammed Junaideen Abdul.
Rainbow: John Alyn Agar.
Rivers: Hugh Francis.
Robinson: Hugh David Geoffrey, Bingley.
Roe: Arnold Leslie.
Rogerson: Ian Paul Lang, Hull.
Rome: Alan Mackenzie.
Rookley: William Peter, Truro.
Rouse: John Leonard, Tunbridge Wells.
Rowland: William John, Exeter.
Sampson: William Brook, Edinburgh.
Samuel: Robert James, Buckie.
Sanderson: Robin Malcolm Keith.
Saxon: David Anthony, Dip.Arch.(Cardiff).
Scampton: (Mrs.) Ann Barbara, Bristol.
Scoble: Geoffrey John, Richmond, Surrey.
Scoggins: Brian Keith, Rugby.
Scott: George Hemsley, Dipl.Arch.(U.C.L.).
Scott: Philip Earle, B.E.(Arch.)(Adelaide), Clarence Gardens, South Australia.
Severn: John Amos, Nottingham.
Shadwell: Kenneth Godfrey, Gloucester.
Sharpe: Peter Jeffrey, Nottingham.
Sheffield: Graham, Dip.Arch.(Nottm.),Ilkeston.
Sidnell: William Bruce, Dipl.Arch.(U.C.L.), Carshalton.
Simpson: Geoffrey Herbert, Dip.Arch.(Nottm.), Nottingham.
Simpson: Robert, Belfast.
Smith: Gerald, Dip.Arch.(Leics.), Northampton.
Smith: Gerald Ross, Larne, Co. Antrim.
Smith: John Trattles, Middlesbrough.
Smith: Keith Graham.
Snadden: Roy William McKenzie, Warrington.
Spaxman: Raymond James, Dip.Arch.(Nottm.), Coventry.
Spiwak: Henry J.
Stanger: George, Wakefield.
Stapleton: Eric Sidney.
Stepan: Ryszard, Middlesbrough.
Stephens: Edward John, Birmingham.
Stevens: Alan Frederick, A.R.I.C.S.
Stirgess: Lionel, M.C.D., B.Arch.(L'pool).
Straiton: James Taylor, Falkirk.
Sutherland: Rundle Leslie.
Sweeney: Terence Patrick, Bristol.
Tansley: Kenneth, Derby.
Tasker: Kenneth, M.C.D., B.Arch.(L'pool), Liverpool.
Taylor: Anthony James, Sidcup.
Thompson: Hugh Terence, Newcastle upon Tyne.
Tilley: John Charles, Southampton.
Tucker: Donald Stanley, Crowthorne.
Wall: John David Crozier, Dip.Arch.(Leics.), Peterborough.
Wallhouse: (Miss) Barbara Meru, Dipl.Arch. (U.C.L.), Leicester.
Walshaw: Robert David, B.Arch.(L'pool), Wirral.
West: George Edmund.
White: (Mrs.) Margaret Lucy Mary (*née* **Butters**), Sutton.
Widdup: George, A.R.I.C.S., Morecambe.
Williams: Norman Glyn, B.Arch.(L'pool), Wirral.
Willis: Frederick Alfred, Chelmsford.
Wilson: John Kirkwood, Glasgow.
Wolpert: Donald Brian John, Falmouth.
Wood: James Henry, Bognor Regis.
Woolnough: Gerald James, New Malden.
Worboys: Raymond John, Redhill.
Wornell: Arthur John Charles, Leigh-on-Sea.
Worth: Kenneth Frederick George, Reading.
Worts: James Bernard, Wantage.
Wright: Eric, Manchester.
Yabsley: John Frederick, Chorleywood.
Young: David, Yeovil.
Young: John Kenneth, Watford.

ELECTION: 6 MAY 1958

An election of candidates for membership will take place on 6 May 1958. The names and addresses of the candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Saturday 12 April 1958.

The names following the applicant's address are those of his proposers.

AS HON. FELLOW (1)

Macmillan: The Right Hon. Harold, M.P., 10 Downing Street, S.W.1. Proposed by the Council.

AS FELLOWS (6)

Mackness: Arthur Reginald [*A* 1932], City Architect's Department, Bristol; 'Ash Priors', 55 Druid Hill, Stoke Bishop, Bristol 9. A. F. French, J. N. Meredith, E. H. Button.

Matthew: Chessor Lille, Dip.Arch.(Abdn.), A.M.T.P.I. [*A* 1936], Head of the School of Architecture, Dundee College of Art, Perth Road, Dundee; Tircarra Lodge, Monifieth Road, Dundee. Lewis John, Sir Percy Thomas, Dr. T. A. Lloyd.

Moiret: Peter Paul [*A* 1957], Bridge House, 181 Queen Victoria Street, E.C.4; 21 Willifield Way, N.W.11. R. Jelinek-Karl, Leslie Wood, Robert Cromie.

Schofield: Harry [*A* 1948], Corby Development Corporation, Corby, Northants; Dell House, High Street Green, Hemel Hempstead, Herts. H. K. Ablett, H. G. Coulter, J. W. Buchanan.

Scott: James Victor Trousdell, Dipl.Arch. (L'pool), Dip.T.P.(Edin.), A.M.T.P.I. [*A* 1942], 30 College Gardens, Belfast; 3 Adelaide Park, Belfast. R. L. Davies, R. S. Wilshere, Dr. Ronald Bradbury.

and the following Licentiate who is qualified under Section IV Clause 4(*c*)(ii) of the Supplemental Charter of 1925:

Walsh: Frederic John, Wareham & Purbeck Rural District Council, Westport House, Wareham, Dorset; Rydal Cottage, Mill Pond, Swanage, Dorset. B. M. Goodwin, L. E. Gregory, R. A. Phillips.

AS ASSOCIATES (37)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

Adutt: Stephen George, (Northern Poly. London: Dept. of Arch.), Reed Cottage, Hulcott, Aylesbury, Bucks. T. E. Scott, C. G. Bath, H. H. Powell.

Alaway: Kenneth Harry Merville (Special Final Examination), 39 Broadway, Merriott, Somerset. R. O. Harris, R. M. Torrens, C. G. Toy.

Ancill: David John, Dip.Arch.(Sheffield)(Univ. of Sheffield, Dept. of Arch.), 3 Fosbury Mews, Inverness Terrace, W.2. Prof. Stephen Welsh, D. H. McMorran, George Whitby.

Barron: Bryan Morrison (Final), Ratton Croft, Park Lane, Eastbourne, Sussex. R. W. Stevenson, Arthur Wilkinson, H. H. Ford.

Catterall: Peter Damian, B.A.(Arch.) (Manchester) (Victoria Univ., Manchester: Sch. of Arch.), Wrenbury, 37 Cecil Street, Lytham, Lancs. Prof. R. A. Cordingley, Dr. W. A. Singleton, E. S. Benson.

Chalmers: John Alexander, (Special Final Examination), 24 Greenbank Road, Edinburgh 10. W. H. Kininmonth, L. G. MacDougall, C. G. Mant.

Craig: Thomas, Dip.Arch.(Abdn.), (Aberdeen Sch. of Arch., Robert Gordon's Tech. Coll.), 17 Dryburgh Gardens, Kelvinside, Glasgow, N.W. E. F. Davies, J. A. Coia, Fenton Wyness.

Davis: Peter Charles, (Final), 12 Manilla Road, Clifton, Bristol 8. A. H. Clarke, T. H. B. Burrough and applying for nomination by the Council under Bye-law 3(*d*).

Dodd: Gresham Howard, (Special Final Examination), Chalky Field Cottage, Jordans, Bucks. David Jenkin, E. C. Kent, J. S. Walkden.

Edwards: Charles Michael, Dip.Arch.(Birm.), (Birmingham Sch. of Architecture), 34 Prospect Lane, Solihull, Warwickshire. A. Douglas Jones, Frankland Dark, Philip Skelcher.

Ellis: Ernest John, (Leeds Sch. of Arch.,) 197 Queens Drive, Ossett, Yorks. Noel Pyman, W. H. King, G. Davy.

Field: Gordon Henry, (Final), 3 Northampton Road, Bromham, Beds. Max Lock, S. V. Goodman, W. G. Walmsley.

Finn: George James, Dip.Arch.(Sheffield), (Univ. of Sheffield; Dept. of Arch.,) 2 Stokes Road, Corby, Northants. Prof. Stephen Welsh, E. H. Ashburner, Dr. D. R. Harper.

Henderson: William Maurice, B.A.(Dublin) (Special Final Examination), Westray, 17 Sidney Parade, Ballsbridge, Dublin. Raymond McGrath, J. O'H. Hughes, J. G. Butler.

Hodgkinson: Philip George, Dip.Arch.(Birm.), (Birmingham Sch. of Arch.), Farnleigh, Park Road, Tring, Herts. D. E. E. Gibson, F. B. Pooley, A. Douglas Jones.

Ingham: John Keith, Dipl.Arch.(U.C.L.) (Bartlett Sch. of Arch. Univ. of London), Greystones, Regent Avenue, Lytham, Lytham St. Annes, Lancs. Prof. H. O. Corfiato, S. L. Thomson, Thomas Ritchie.

Jackson: William James Campbell (Kings Coll. (Univ. of Durham), Newcastle upon Tyne Sch. of Arch.), 22 South End, High Pittington, Co. Durham. Prof. W. B. Edwards, Bruce Allsopp, J. H. Napper.

Kennedy: Daniel Joseph, B.Arch.(N.U.I., Dublin) (Univ. Coll. Dublin, Ireland. Sch. of Arch.), 14 Castle Countess, Tralee, Co. Kerry, Ireland. Prof. J. V. Downes, J. J. Robinson, Vincent Kelly.

Law: Harry Raffan, Dip.Arch.(Abdn.) (Aberdeen Sch. of Arch., Robert Gordon's Tech. Coll.), 1 Isla Crescent, Luncarty, Perthshire. E. F. Davies, D. J. A. Ross, John Maclennan.

McMahon: Neville, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 81 Wivelsfield Road, Balby, Doncaster, Yorks. Prof. Stephen Welsh, Prof. John Needham, Hugh Smith.

McNidder: David, D.A.(Glas.) (Glasgow Sch. of Arch.), 19 Blythswood Drive, Paisley, Renfrewshire. Prof. W. J. Smith, A. D. Cordiner, T. S. Cordiner.

Musset: Geoffrey Rene Henri, Dip.Arch.(The Polytechnic) (The Poly., Regent Street, London, Sch. of Arch.), 8 Westdown Road, S.E.6. J. F. Howes, Louis Erdi, Richard Sheppard.

Owen: Jeffrey Thomas, (Final), 82 Monthermer Road, Cathays, Cardiff. Lewis John, Dr. T. A. Lloyd and applying for nomination by the Council under Bye-Law 3(*d*).

Paterson: Walter Donald, D.A.(Glas.) (Glasgow Sch. of Arch.), 1 Belgrave Terrace, Glasgow, W.2. Prof. W. J. Smith, J. A. Coia, A. D. Cordiner.

Pennock: Brian, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 24 Cotswold Road, Hillsborough, Sheffield 6. Prof. Stephen Welsh, Prof. John Needham, H. B. Leighton.

Ralph: Maurice, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 21 Firbeck Road, Laughton, Sheffield. Prof. Stephen Welsh, Prof. John Needham, Hugh Smith.

Rose: Andrew Arthur, B.A.(Cantab.), D.A. (Edin.), (Edinburgh Coll. of Art, School of Arch.), 28 Ravelston Dykes, Edinburgh 4. W. G. Dey, Esme Gordon, L. G. MacDougall.

Smith: John Samuel, Dip.Arch.(Leics.) (Leicester Coll. of Art and Tech. Sch. of Arch.), 'Candrens', Mill Hill, Baginton, Coventry. Arthur Ling, Edward Baldwin, A. H. Gardner.

Swainston: Francis Bede, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 55 Heythrop Drive, Acklam, Middlesbrough, Yorks. Prof. Stephen Welsh, Prof. John Needham, H. B. Leighton.

Thompson: Bennie Esler, Dip.Arch.(Sheffield) (Univ. of Sheffield, Dept. of Arch.), 'Alwyn', Rathkenny, Ballymena, Co. Antrim, N. Ireland. Prof. Stephen Welsh, Prof. John Needham, H. B. Leighton.

Turner: James Robert Sommerville, D.A. (Dundee) (Dundee Coll. of Art, Sch. of Arch.), Hillview House, Meigle Road, Alyth, Perthshire. Prof. John Needham, T. H. Thoms, A. F. S. Wright.

Twells-Grosse: (Mrs.) Helen Gillian, (Final), 11 Langland Gardens, N.W.3. Philip Powell, M. H. Cooke-Yarborough, J. M. Grice.

Urwin: Ian, Dip.Arch.(Dunelm), King's Coll. (Univ. of Durham, Newcastle upon Tyne Sch. of Arch.), 84 West Avenue, Westerhope, Newcastle upon Tyne 5. Prof. W. B. Edwards, J. H. Napper, F. Fielden.

Walker: William Harry, B.A.(Arch.)(Manchester) (Victoria Univ., Manchester: Sch. of Arch.), 41 Porlock Road, Baguley, Wythenshawe, Manchester. Prof. R. A. Cordingley, E. S. Benson, Dr. W. A. Singleton.

Warnock: James Michael, Dip.Arch.(Birm.) (Birmingham Sch. of Arch.), 10 Westland Avenue, Wolverhampton, Staffs. A. Douglas Jones, A. R. Young, R. F. Jordan.

Wiles: Richard James, B.Arch.(L'pool) (Liverpool Sch. of Arch., Univ. of Liverpool), 11 Tittensor Road, Newcastle, Staffs. Prof. R. Gardner-Medwin, R. R. Young, B. A. Miller.

Williams: Desmond James, Dip.Arch.(Manchester) (Victoria Univ., Manchester: Sch. of Arch.), 101 Alexandra Road South, Whalley Range, Manchester 16. Prof. R. A. Cordingley, Dr. W. A. Singleton, E. S. Benson.

ELECTION: 8 JULY 1958

An election of candidates for membership will take place on 8 July 1958. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Wednesday 25 June 1958.

The names following the applicant's address are those of his proposers.

AS FELLOW (1)

Newcombe: Vernon Zunz, M.T.P.I. [*A* 1947], c/o Housing Trust, P.O. Box 1078, Kuala Lumpur, Malaya. Prof. Clifford Holliday, Prof. R. A. Cordingley, C. H. Aslin.

AS ASSOCIATES (10)

The name of a school, or schools, after a candidate's name indicates the passing of a recognised course.

Alexander: Ernest Robert, B.Arch.(C.T.) (Passed a qualifying Exam. approved by the I.S.A.A.), P.O. Box 1648, Accra, Ghana. Prof. L. W. T. White, O. Pryce Lewis, F. L. Sturrock.

Austin: Barrymore, Dipl.Arch.(Pretoria) (Passed a qualifying Exam. approved by the I.S.A.A.), c/o Messrs. Erik Todd, Horrell, Van Schaik and Austin, 7th Floor, J.B.S. Building, Bureau Lane, Pretoria, S. Africa. Prof. A. L. Meiring, W. A. Macdonald, V. S. Rees-Poole.

Bates: (Miss) Toni Elizabeth, B.Arch.(Sydney) (Passed a qualifying Exam. approved by the R.A.I.A.), 14, Serpentine Parade, Vaucluse, Sydney, N.S.W., Australia. Prof. H. I. Ashworth, A. J. Ralton, R. S. Demaine.

Colven: Ronald Thomas John, Dipl.Arch. (U.C.L.) (Bartlett Sch. of Arch.: Univ. of London), c/o Messrs. Nilsson, Sundberg, Wiren, Bamanqsgatan, 41, Stockholm, Sweden. Prof. H. O. Corfiato, R. C. White-Cooper, S. L. Thomson.

Dewhurst: Barrie, A.A.Dipl. (Arch.Assoc. (London): Sch. of Arch.), Box 1530, Lusaka, Northern Rhodesia. Clifford Duke, R. F. Jordan, Arthur Korn.

Hogg: Alan Davis, (Final), 881 Coxwell Avenue, Toronto 6, Ontario, Canada. Prof. W. B. Edwards, Bruce Allsopp, J. H. Napper.

Jablonski: Ryszard-Krzysztof, (Passed a qualifying Exam. approved by the I.S.A.A.), c/o Architectural Section, P.W.D. Central Government Offices, Vermeulen Street, Pretoria, S. Africa. W. A. Macdonald, C. S. Lodge, V. S. Rees-Poole.

Leong: Stanley Thoe Sing, B.Arch.(Sydney) (Passed a qualifying Exam. approved by the R.A.I.A.), 45 Bank of China Building, Singapore. Prof. H. I. Ashworth, C. Y. Koh, K. S. Ng.

Michalska: (Miss) Alina, (Special Final), 4965 Cote St. Luc., Apt. 3, Montreal, Quebec, Canada. Ralph Betts, Colin Drewitt, Charles David.

Reid: Bruce, B.Arch.(Sydney) (Passed a qualifying Exam. approved by the R.A.I.A.), 7 Mortlake Street, Concord, N.S.W., Australia. Prof. H. I. Ashworth, Prof. Denis Winston, Cobden Parkes.

Members' Column

This column is reserved for notices of changes of address, partnership and partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. A. L. Berry [*A*] has relinquished his post with the Isle of Ely County Council to take up the appointment of Chief Architect to the County Borough of Gateshead and his address will now be Chief Architect, Swinburne Street, Gateshead-on-Tyne.

Mr. Peter Daniel [*A*] has been appointed Deputy Chief Architect of Peterlee New Town. His private address is Oakerside Cottage, Castle Eden Dene, via Horden, Co. Durham (Castle Eden 352).

Mr. G. H. Franklin [*A*] has been appointed Architect/Planner to the Government of Indonesia under the Colombo Plan Technical Aid Programme. His address is now c/o The British Embassy, Djakarta, Indonesia.

Mr. W. G. Gregory [*A*] has been appointed Professor of Architecture in the University of Hong Kong in succession to **Professor R. Gordon Brown** [*F*], who is now in London on leave.

Mr. Stanley Townrow [*A*] has been appointed Assistant County Architect of Gloucestershire in succession to **Mr. R. E. Angles** [*A*] who has retired.

PRACTICES AND PARTNERSHIPS

Mr. Leslie Buxton [*A*] and **Mr. John C. Truscott** have entered into partnership and will practise at Public Rooms, Truro Road, St. Austell, Cornwall (St. Austell 747) under the title of **Buxton and Truscott.**

The practice of the late **Peter Cummings** [*F*] has been acquired by **Mr. J. H. C. Brown** [*A*] and the business, under the style of **Cummings and Brown,** has been transferred to 36 Townley Street, Middleton, Manchester (Middleton 2200), from which address the business of both offices will in future be conducted.

Mrs. Sheila M. Gooch [*A*] has begun private practice at Gurney Court, Magdalen Street, Norwich (Norwich 27506) where she will be pleased to receive trade catalogues, etc.

Mr. D. Crawford Lloyd [*A*] has started practice on his own account at Queens Chambers, Main Road, Upper Hutt, New Zealand.

Messrs. Mather and Nutter [*AA*] have taken over the practice of the late **Stanley Birkett** [*A*] and will continue to practise from Portland House, 103 Portland Street, Manchester 1 (Central 6061).

Mr. Brian Meeking [*A*] has commenced practice at 41 Blackheath Road, London, S.E.10 (Tideway 1438), where he will be pleased to receive trade catalogues.

Mr. Derek Phillips, M.Arch.(Mass. Inst. Tech.), M.C.D., B.Arch.(L'pool) [*A*], has resigned from his position as architectural consultant on the staff of the A.E.I. Lamp and Lighting Co., Ltd. He has commenced practice as architect and independent consultant at 13 Oppidans Mews, London, N.W.3, where he will be glad to receive technical advertising with particular relevance to the lighting industry.

The firm of **Llewellyn Smith and Waters** of London and **Willis, Llewellyn Smith and Waters** of Worcester will in future be known as **Llewellyn Smith and Waters** of London and Worcester. The partners (**A. B. Waters** [*F*], **A. Llewellyn Smith** [*F*], **Stanley Willis** [*L*], **B. G. Fender** [*A*], **R. S. Laskey** [*A*] and **F. H. Lloyd** [*A*]), have taken **Mr. Michael Alford** [*A*], who has managed the Worcester office for a number of years, into partnership.

Mr. Douglas B. Thorpe [*A*] has commenced practice at Temple Street, Llandrindod Wells, Radnor (Llandrindod Wells 2362), where he will be pleased to receive trade catalogues.

Mr. J. Reeve Young [*F*] has taken his son, **Mr. John K. Young** [*A*], into partnership. The name of the firm will now be **J. Reeve Young and Son.** The address remains 165 Gray's Inn Road, London, W.C.1 (Terminus 3901 and 8255).

CHANGES OF ADDRESS

Messrs. S. P. Anderson and Eglinton [*F*/*L*] have changed their address to 20A Eden Street, Kingston-on-Thames. Their telephone number remains Kingston 4242.

Mr. Robert Bailie [*A*] has moved to 21 School Road, East Molesey, Surrey, where he will be pleased to receive trade catalogues.

Mr. Alfred Chatwin [*A*] has changed his address to 34 Sydney Street, Saint John, New Brunswick, Canada.

Mr. A. E. P. Daniels [*L*] has changed his address to 47 Riverside Walk, Isleworth, Middlesex (Isleworth 5407), where he will be pleased to receive trade catalogues.

Mr. S. L. Donovan [*A*] has changed his address to c/o P.W.D., Singapore.

The telephone number of **Messrs. Peter Dunham, Widdup and Harrison's** [*F*/*A*] London office at 29 Bedford Square, W.C.1, is now Museum 2469.

Mr. Eric A. Ely [*A*] has changed his private address to 96 Brancaster Lane, Purley, Surrey

Mr. G. M. Fullman [*A*] has changed his address to Lower Flat, 'Sunny Corner,' Thatcher Avenue, Torquay, Devon.

Mr. P. M. Gibbs [*A*] has changed his address to Chillies Oast House, Crowborough, Sussex (Crowborough 1179).

Mr. Zygmunt J. Nowak [*A*] has changed his address to 106 Park Street, Mayfair, London, W.1 (Mayfair 5968), where he will be pleased to receive trade literature.

Mr. A. Poniatowski [*A*] has changed his address to 'Sarny,' Maes-y-Coed, Barry, Glam.

Messrs. Ernest L. Smith and Son [*L*/*A*] have changed their address to 21 Quay Street, Newport, Isle of Wight. The telephone number remains Newport 2663.

Mr. Julian Tayler, A.M.T.P.I. [*A*], has changed his address to 33 Acacia Avenue, Eastcote, Middlesex.

Messrs. John Terry [*F*] and **Graeme Black** have opened a branch office at 11 McLeod Road, Lahore, West Pakistan, where they will be pleased to receive trade literature, etc.

Mr. J. K. Thompson [*A*] has changed his address to Lot 112, Danien Street, Glen Waverley, Melbourne, Victoria, Australia.

Messrs. Vallis and Bird [*F*/*A*] have opened a branch office at Georgian House, Greenhill, Sherborne, Dorset (Sherborne 851). **Mr. R. W. H. Vallis** will continue to be at 6 North Parade, Frome, Somerset but **Mr. G. P. Bird** will now be at the Sherborne office, where trade catalogues will be welcome.

Messrs. D. R. and D. W. Variava [*AA*] have changed their address to 355 Cromford Road, Aldercar, Langley Mill, nr. Nottingham.

Mr. R. T. Walters [*A*] has changed his address to 3 Wildwood Terrace, London, N.W.3 (Speedwell 1390).

Mr. John Michael Wigglesworth [*A*] has changed his address to c/o Director of Town Planning, P.O. Box 1911, Kampala, Uganda, Africa.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

On retirement of senior partner, Associate Dip.Arch. (35), with established London practice, will require partner of similar age. Some capital and personal contacts and a good social background essential. Box 32, c/o Secretary, R.I.B.A.

Associate, M.A.(Cantab.), Dip.Arch.(Birm.) (38), experienced in local government and private practice, requires practice or partnership in the south or south-west. Capital available. Box 33, c/o Secretary, R.I.B.A.

Associate (45), with 20 years' very varied experience and plenty of drive, seeks to purchase outright a small practice in the south-west, or would consider joining in as a partner. Not rabidly contemporary. Some useful contacts. Has worked abroad for past few years. Box 34, c/o Secretary, R.I.B.A.

Associate, M.C.D., B.Arch.(L'pool) (34), nine years' varied experience, seeks partnership or would take over small practice from principal. Some capital available. South Lancashire preferred. Box 37, c/o Secretary, R.I.B.A.

WANTED AND FOR SALE

Copies of art and architectural journals of the years 1890 to 1910 required. Please write to Box 36, c/o Secretary, R.I.B.A.

Watts microptic level with optical bubble, tripod and staff for sale. All works reconditioned. £60. Box 38, c/o Secretary, R.I.B.A.

Wanted. A copy of the ARCHITECTURAL REVIEW for March 1955. Box 39, c/o Secretary, R.I.B.A.

ACCOMMODATION

Fellow with offices in Bromley, Kent, has small room available with share of drawing office. Suitable for architect with small practice or one starting up in practice. Advertiser is seeking one who would be prepared to co-operate with him during busy periods on a percentage or other basis to be mutually agreed. Box 35, c/o Secretary, R.I.B.A.

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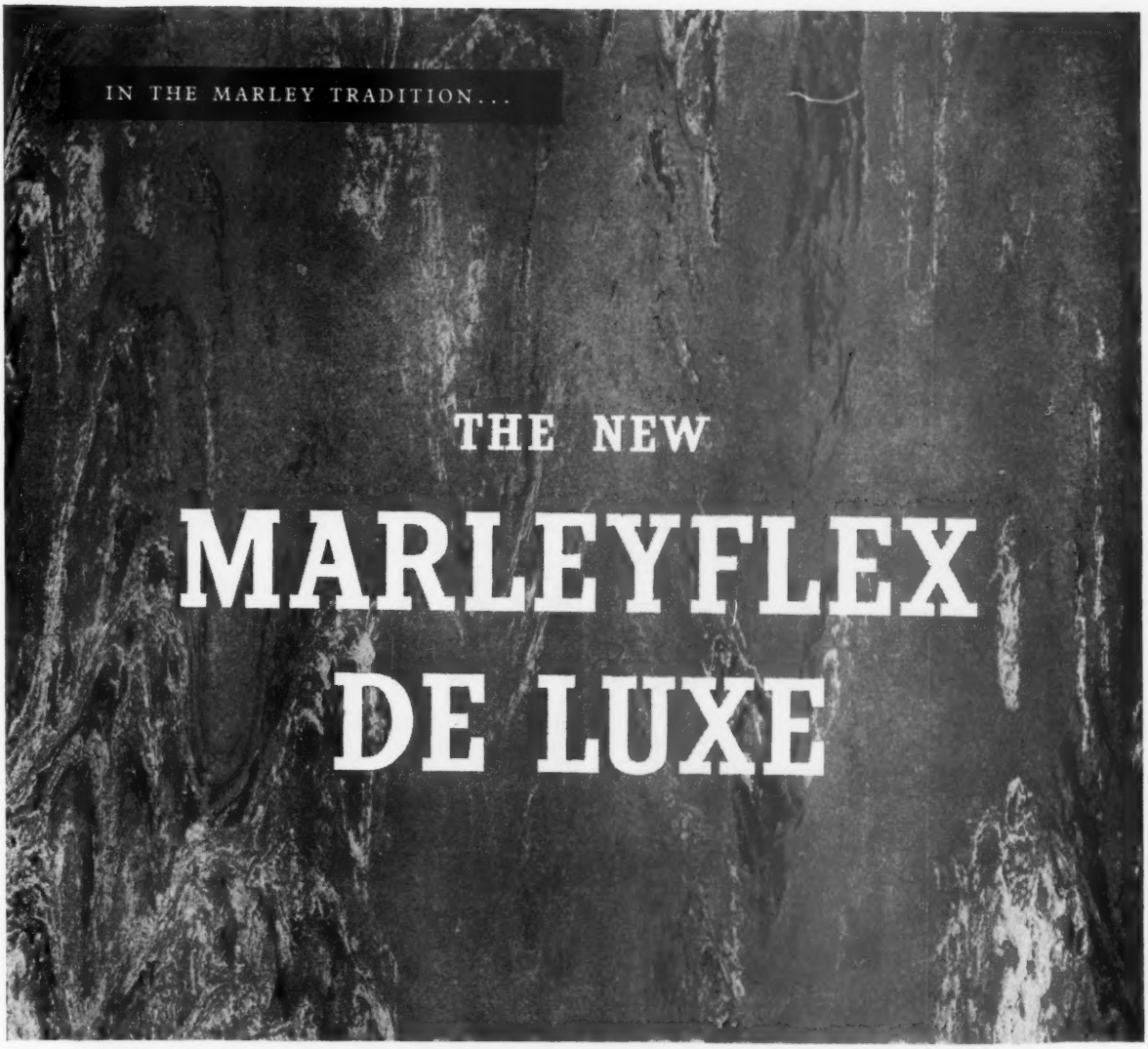

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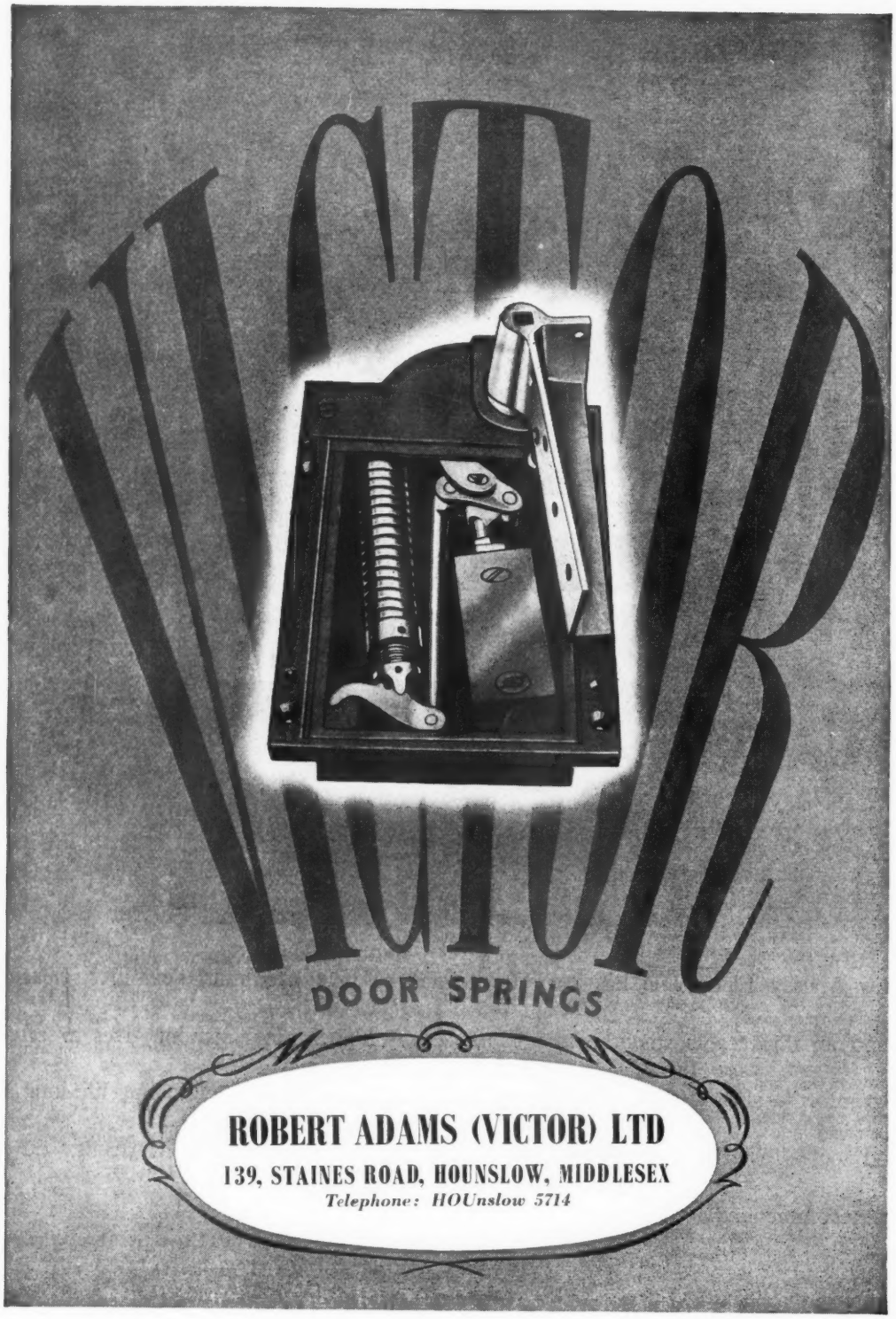
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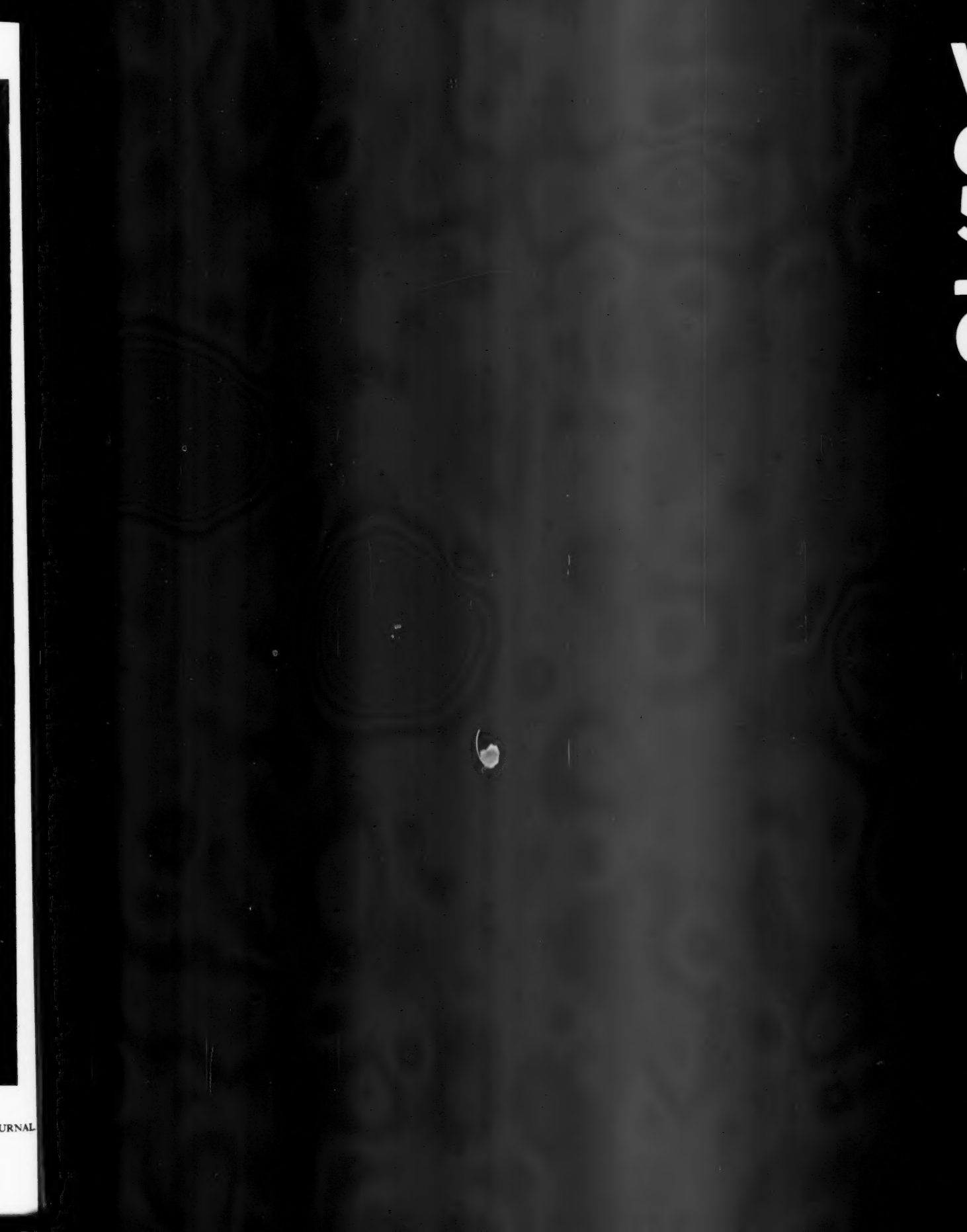

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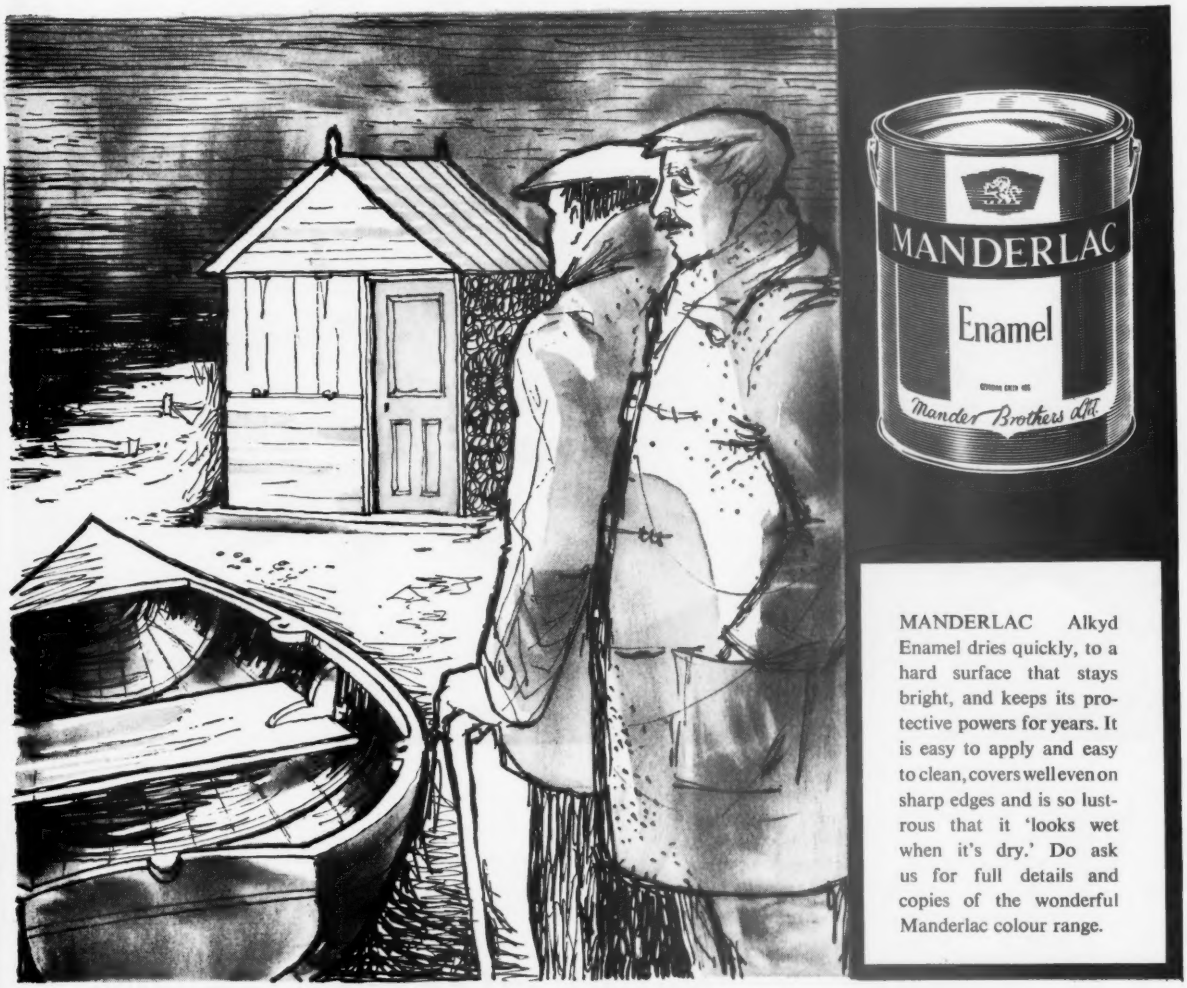

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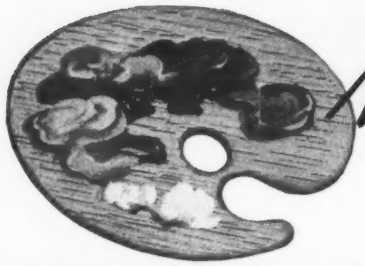

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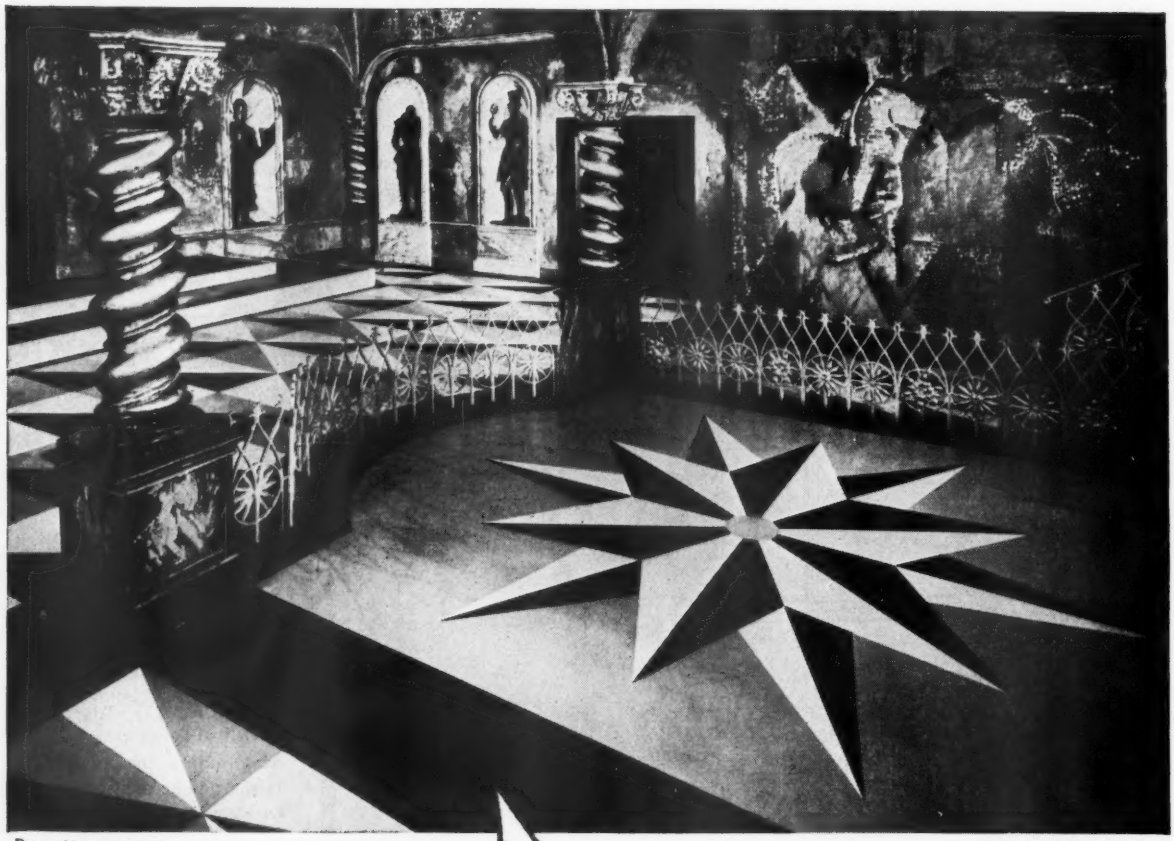

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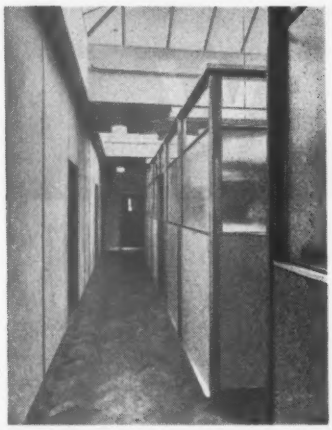

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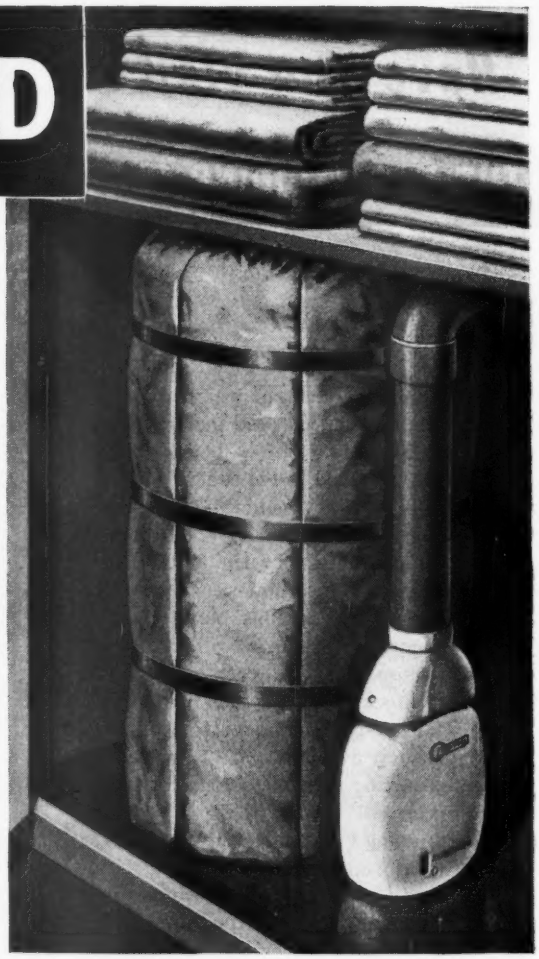

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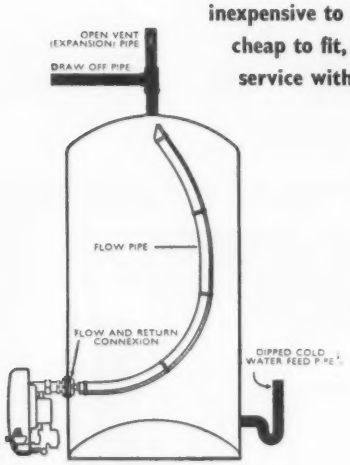

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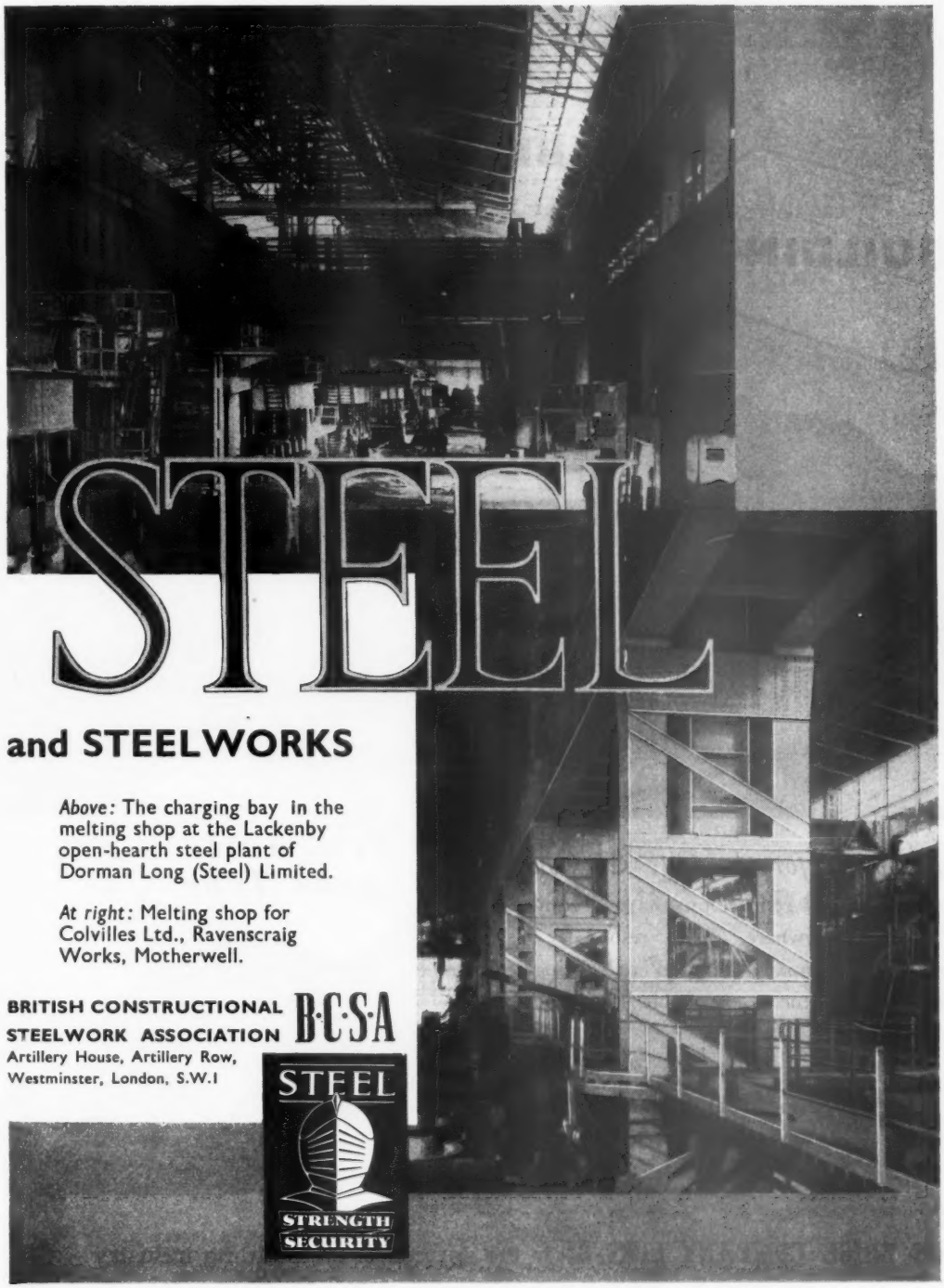

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At right: Melting shop for Colvilles Ltd., Ravenscraig Works, Motherwell.

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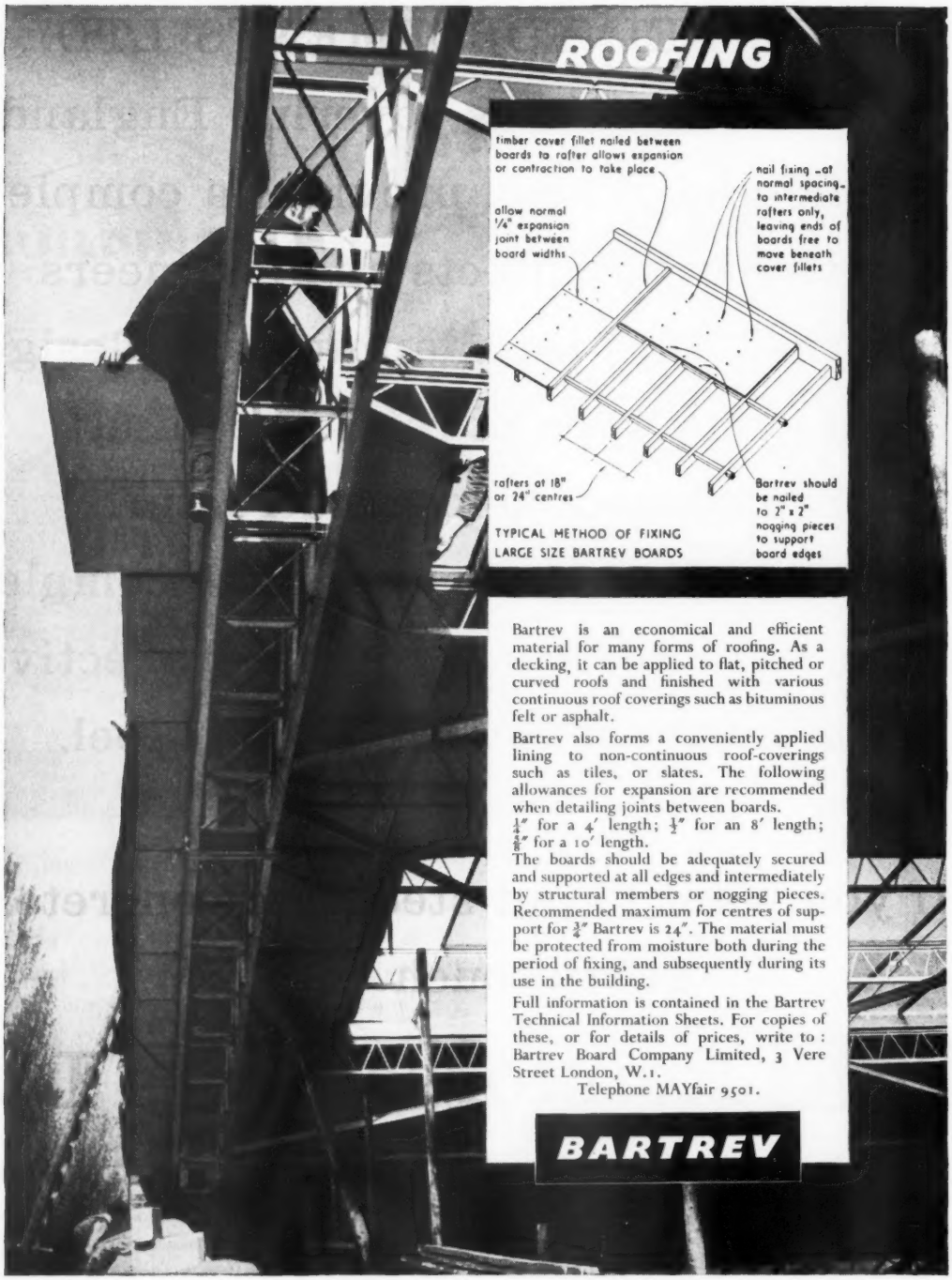
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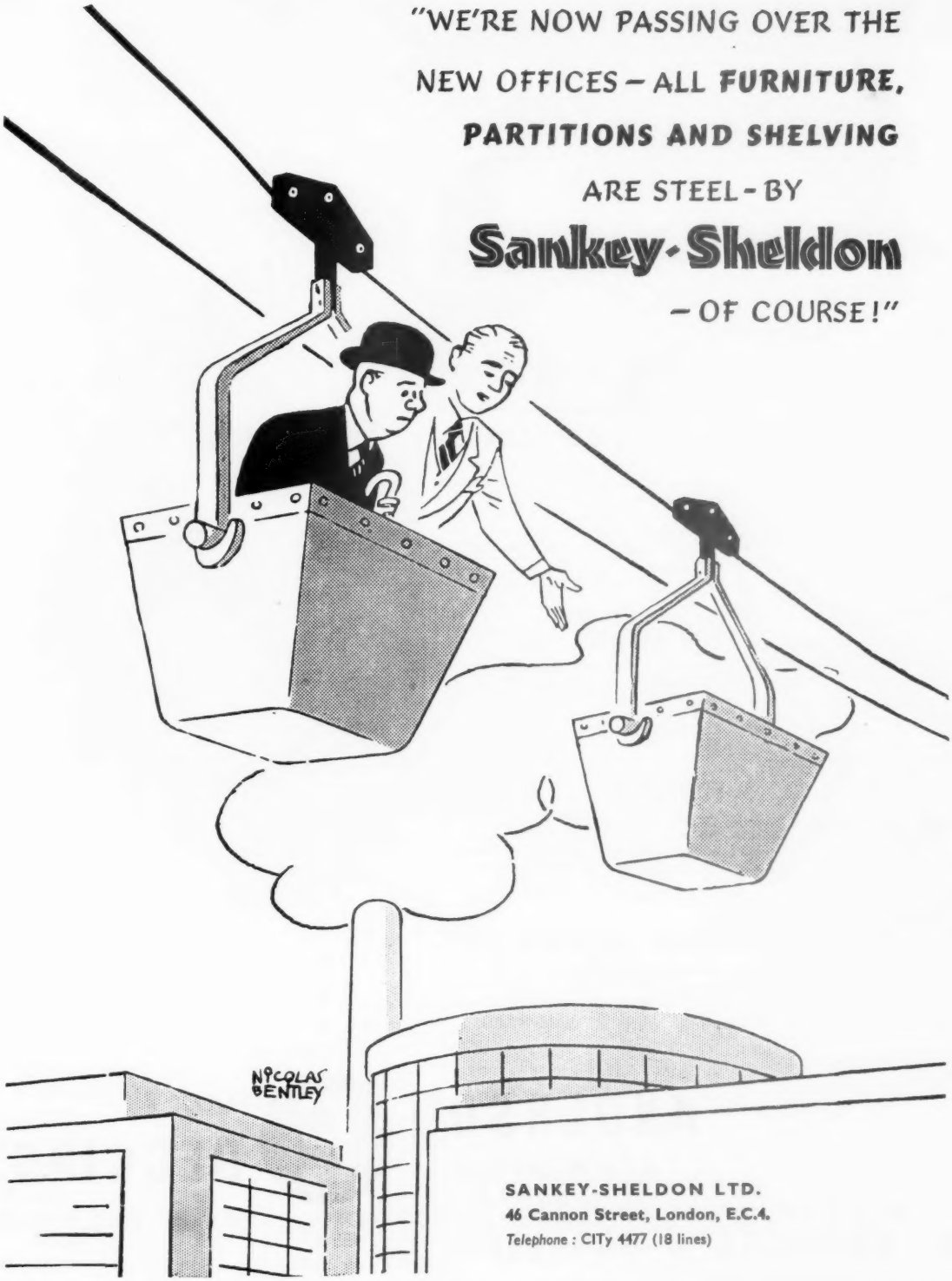

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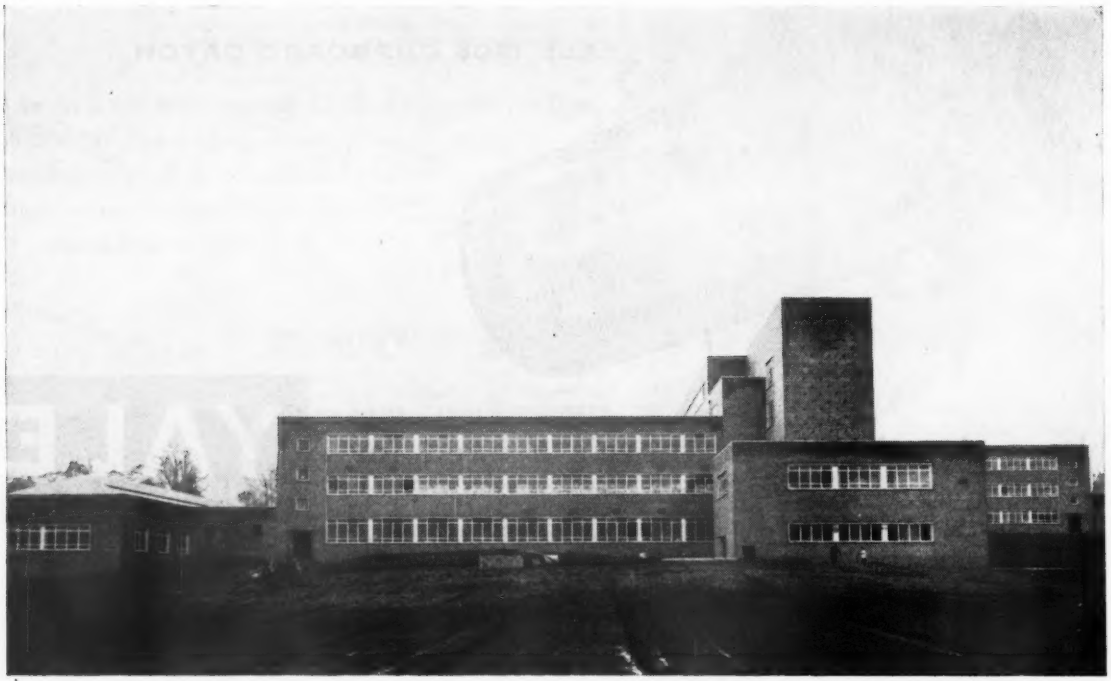

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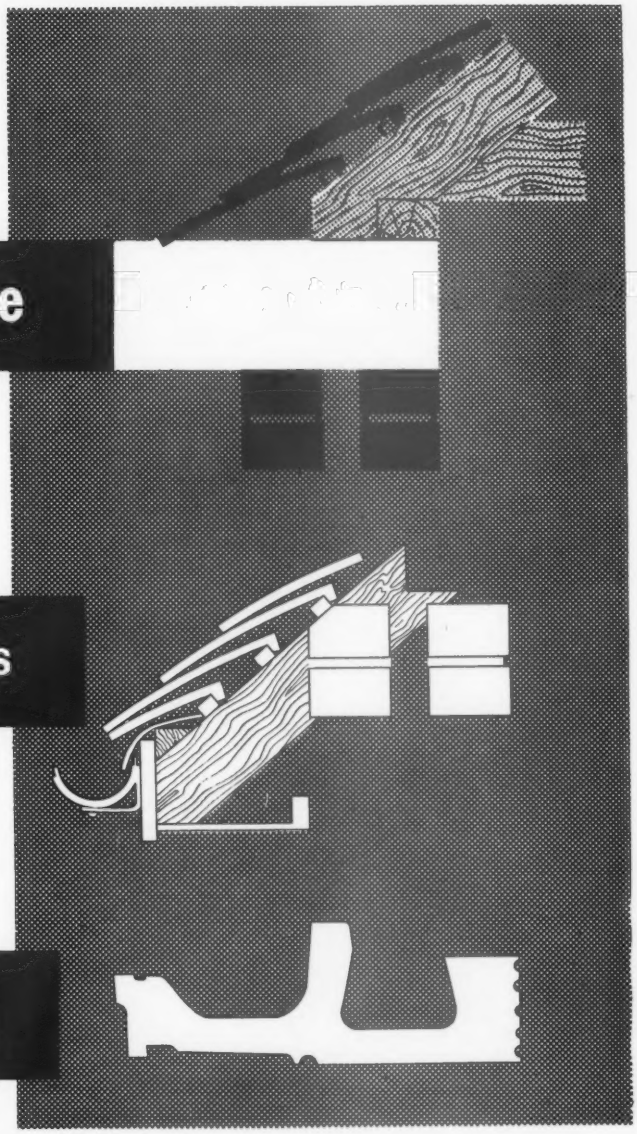

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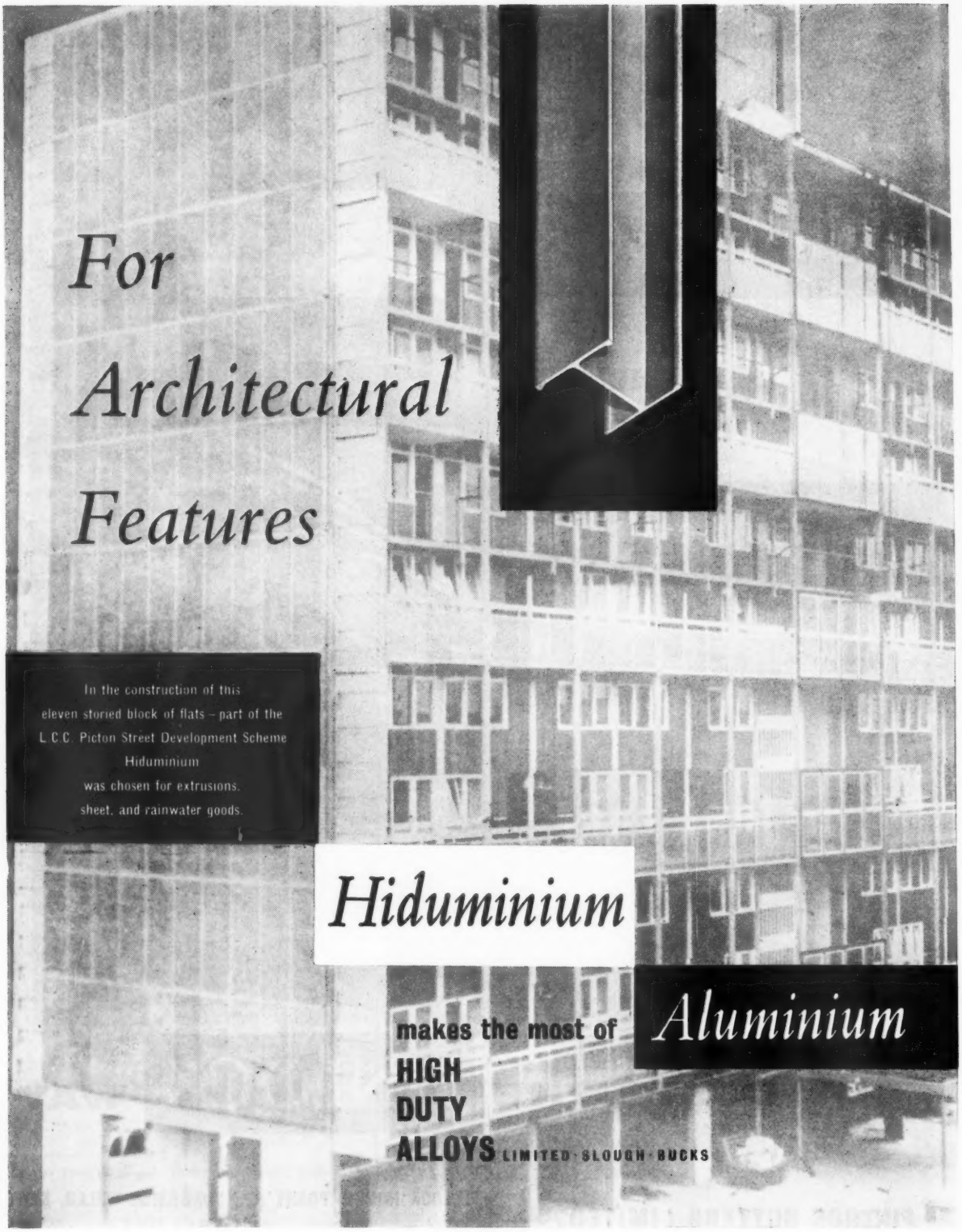
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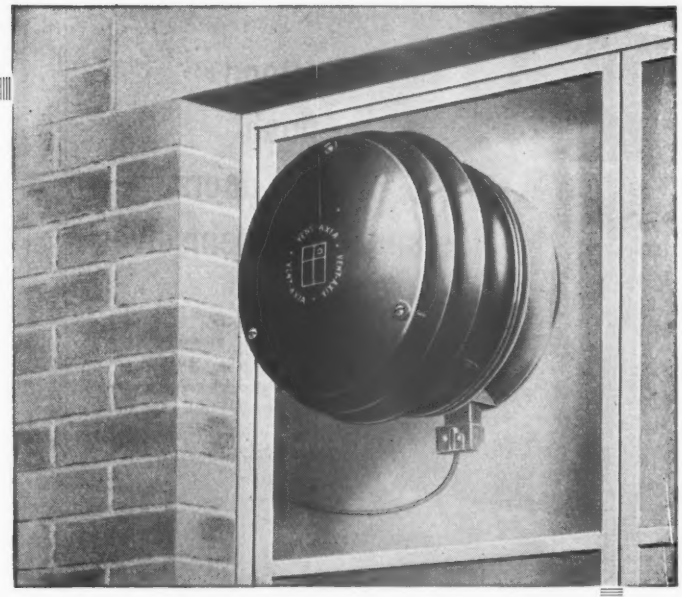

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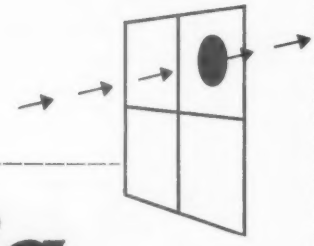

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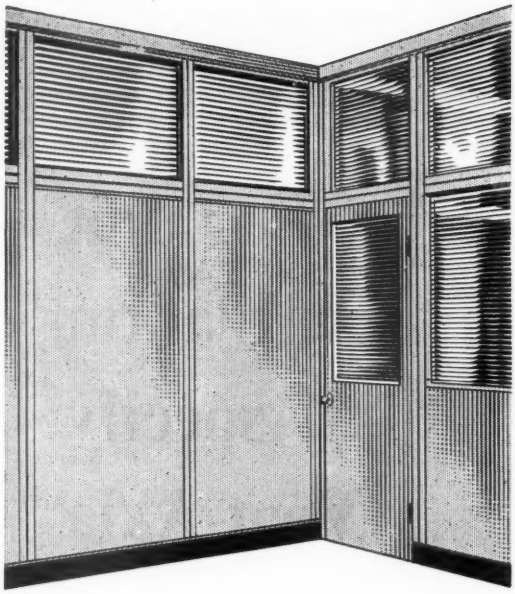

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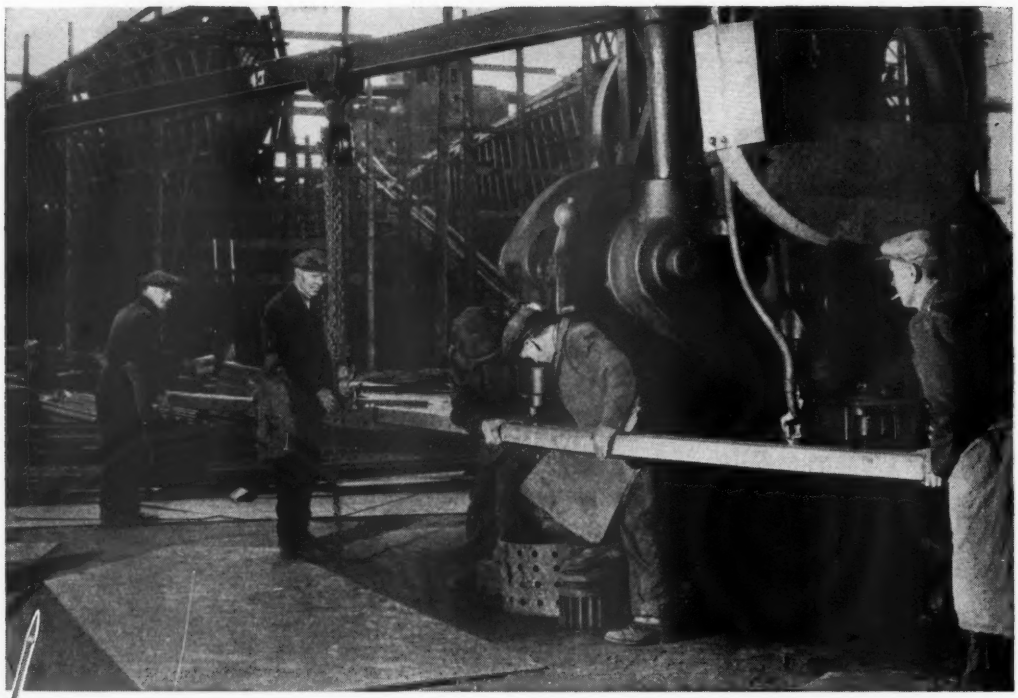

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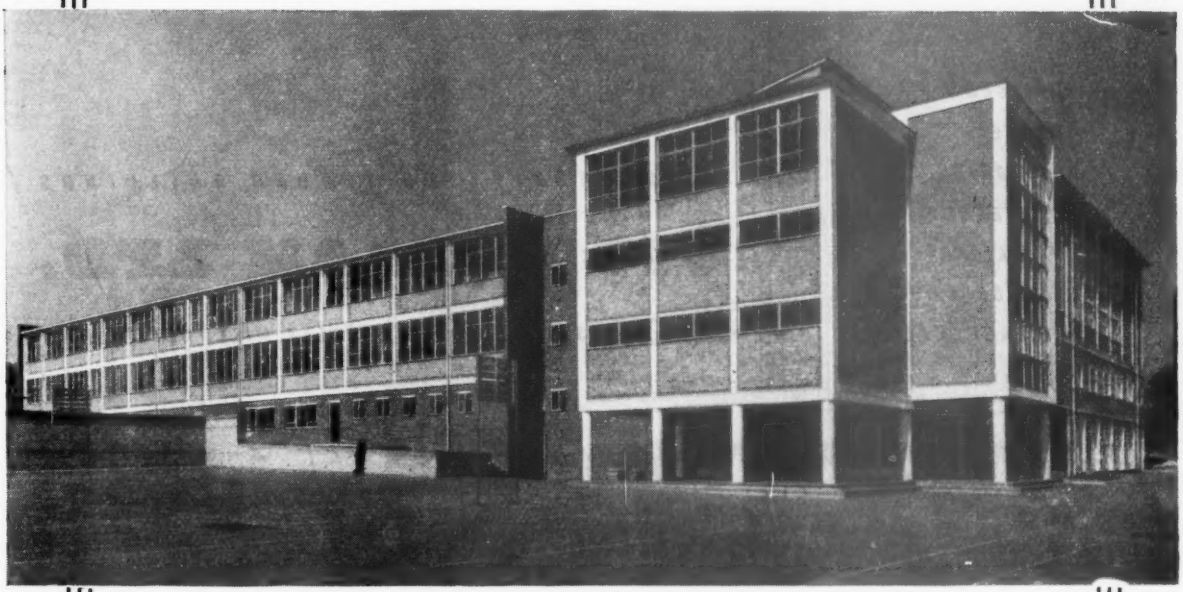

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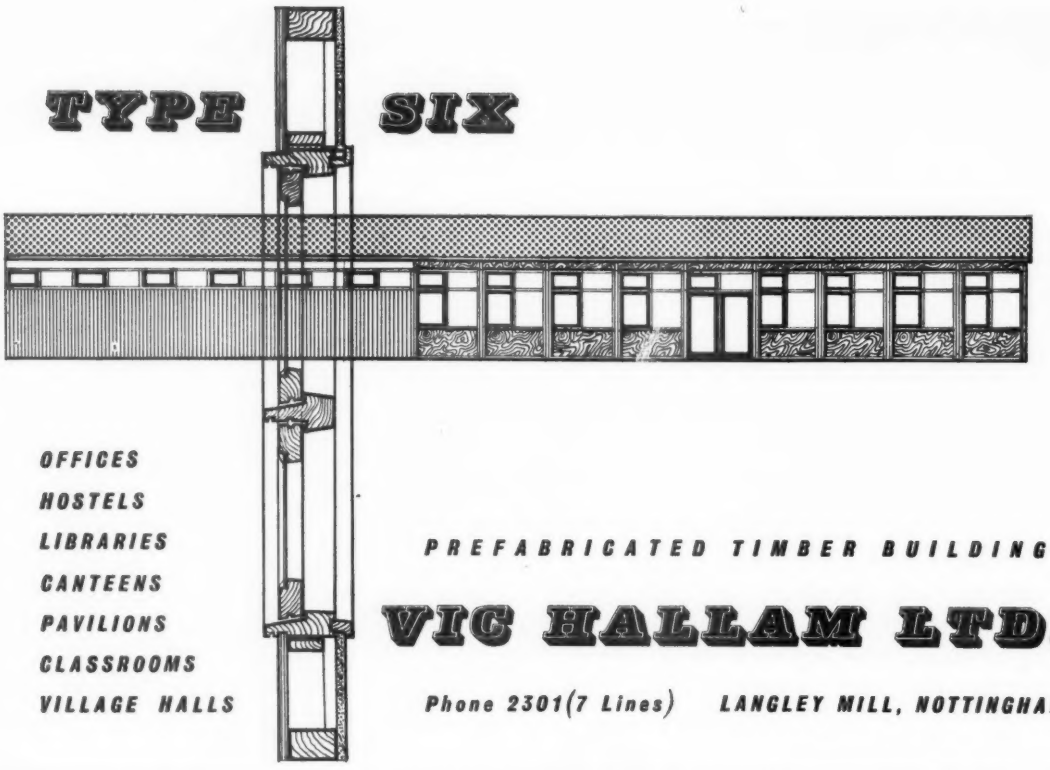

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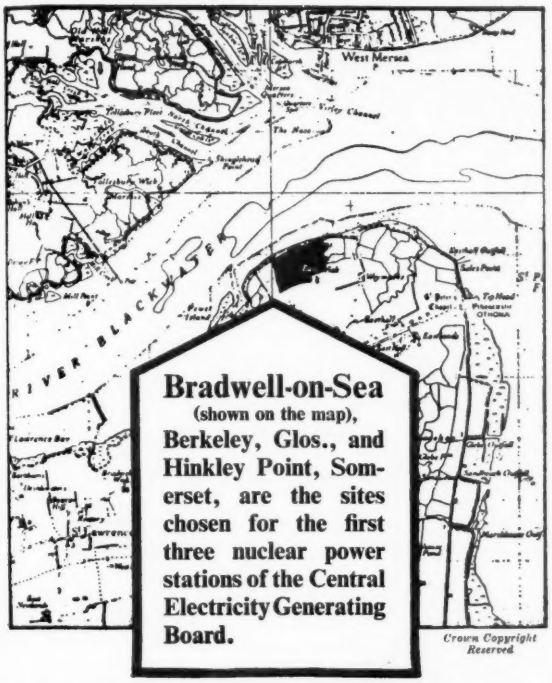

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As Britain's industrial efficiency increases, so does the need for power. The demand for power doubles every ten years. The Electricity Supply Industry has already met the doubled demand since 1st April, 1948, and has made provision for a similar expansion in the next decade.

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The Government's revised nuclear power station programme provides for enough nuclear power stations to be completed in the next decade to provide 5/6 million kilowatts of generating capacity. Provision is also being made for the construction of new main transmission lines and the extension of the distribution network.

As the demand for power grows, nuclear energy will become more and more important as a source of electric power, upon which the economic future of the country so largely depends.

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Resin-bonded fibreglass sheeting has special characteristics which render it of great interest to the architect and of great value to his client. It admits light without glare and is shatterproof, both of which properties render it the roofing material par excellence. It is manufactured in corrugations to nest with all standard opaque corrugated roofing sheets. Tinted fibreglass sheeting, both flat and corrugated, solves many problems where structural strength is required without sacrifice of decorative appearance; and many charming effects may be created by arranging for natural or artificial light behind it.

The manufacture of any material in the form of a "sandwich" presents its own peculiar difficulties and it must be attributed to this fact that no rigid standard specification of universal application has yet been evolved for resin-bonded translucent fibreglass sheeting. The architect will therefore naturally largely be guided in his choice of sheeting by the reputation of the manufacturer. In this respect the Cascelloid Division of the British Xylonite Company Limited stands high: it has for many years been recognised as a leader in plastics manufacture and research and it guarantees the reliability of the translucent sheeting which it manufactures under the name CASCALITE.

The following brief notes on the properties and characteristics of Cascalite serve to indicate standards to which, it is suggested, all such material used for roofing should conform.

Cascalite structural sheeting has a load strength of 100 lb per square foot. Flexural strength averages 25,000 lb per square inch, tensile 12,500 lb per square inch (it should be noted that thickness of the sheet is not a reliable criterion of quality).

After 1,000 hours in a standard accelerated weather testing machine—equal to five years' normal outdoor exposure—Cascalite sheets show little change and indeed they are unaffected by climate, whether tropical or arctic.

When considering fibreglass translucent roofing material it is important to discover whether the percentage of light transmission claimed for it is by comparison with glass or with air. The untinted Cascalite transmits 85 per cent of the light transmitted through plain glass and its heat loss coefficient is actually better than that of glass. (Light transmission may be seriously reduced by poor manufacturing techniques which may not reveal themselves until after weathering has taken place.)

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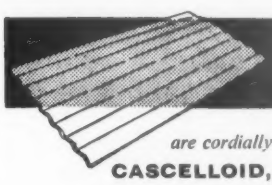

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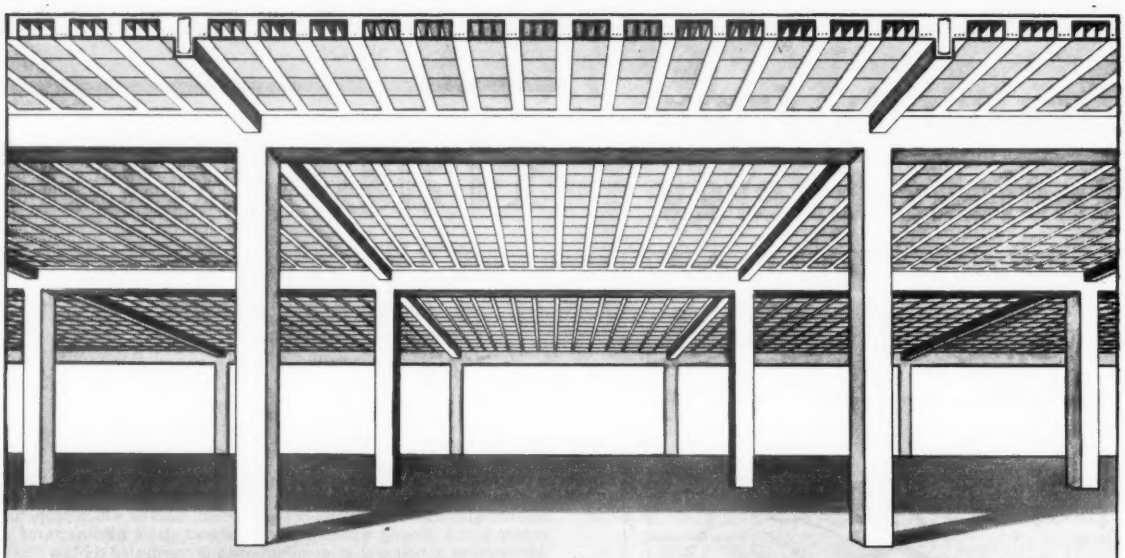

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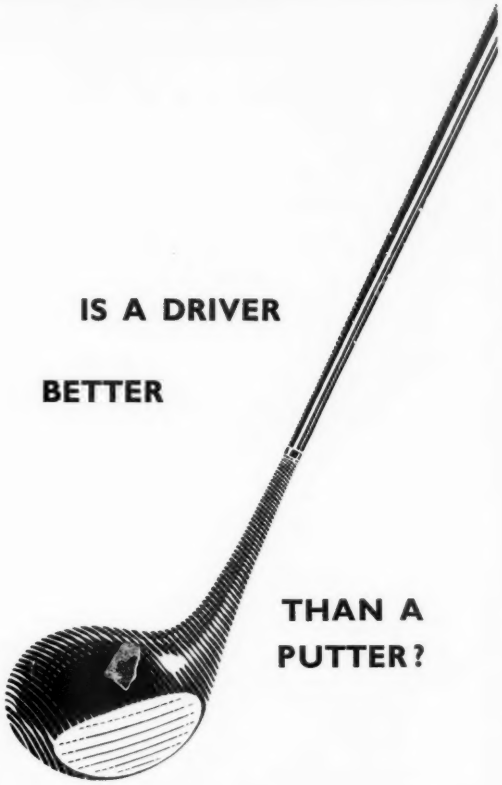

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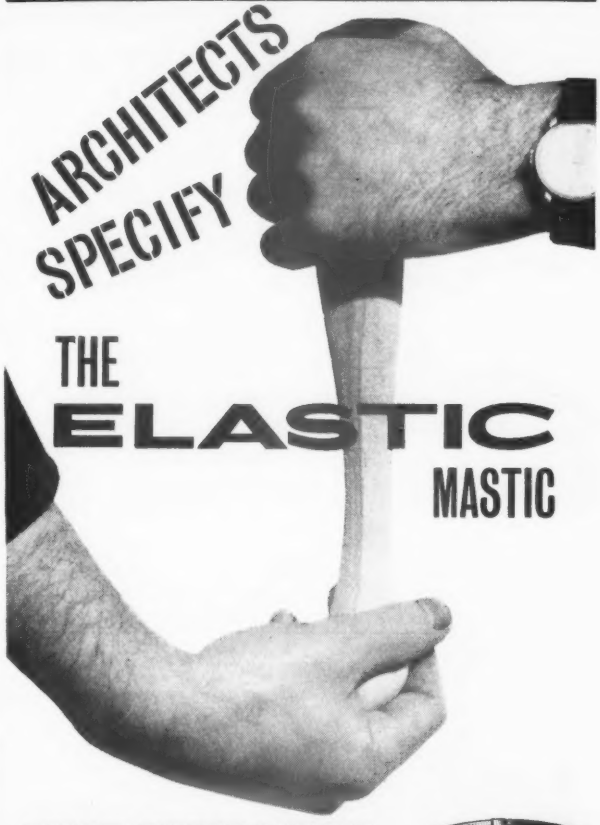

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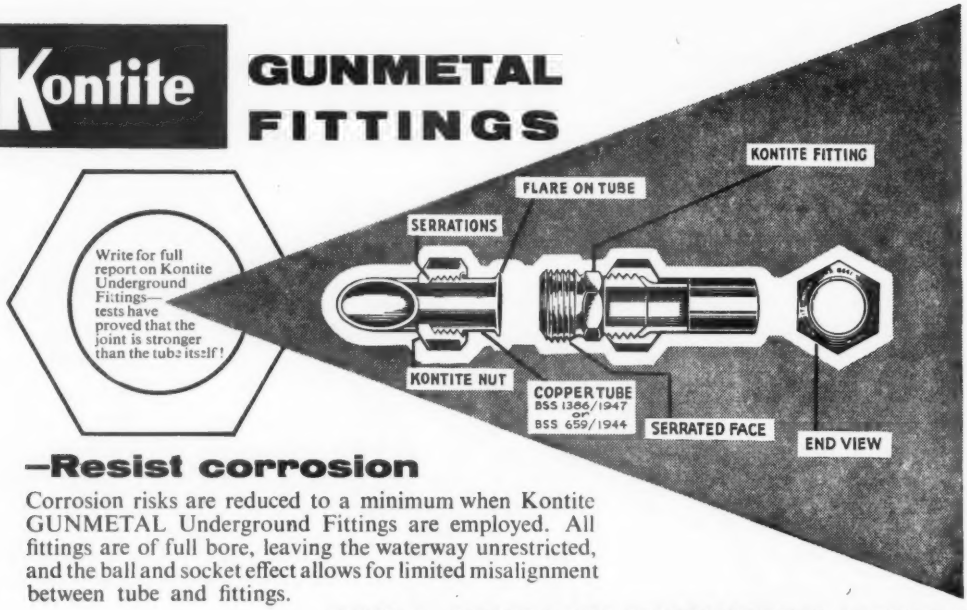

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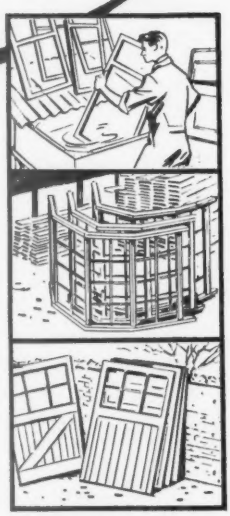

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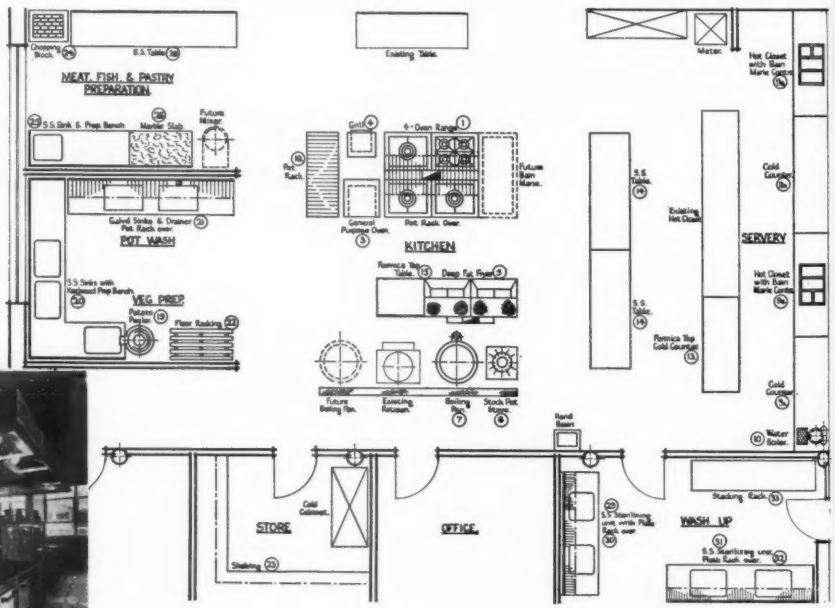

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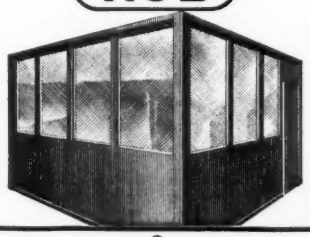

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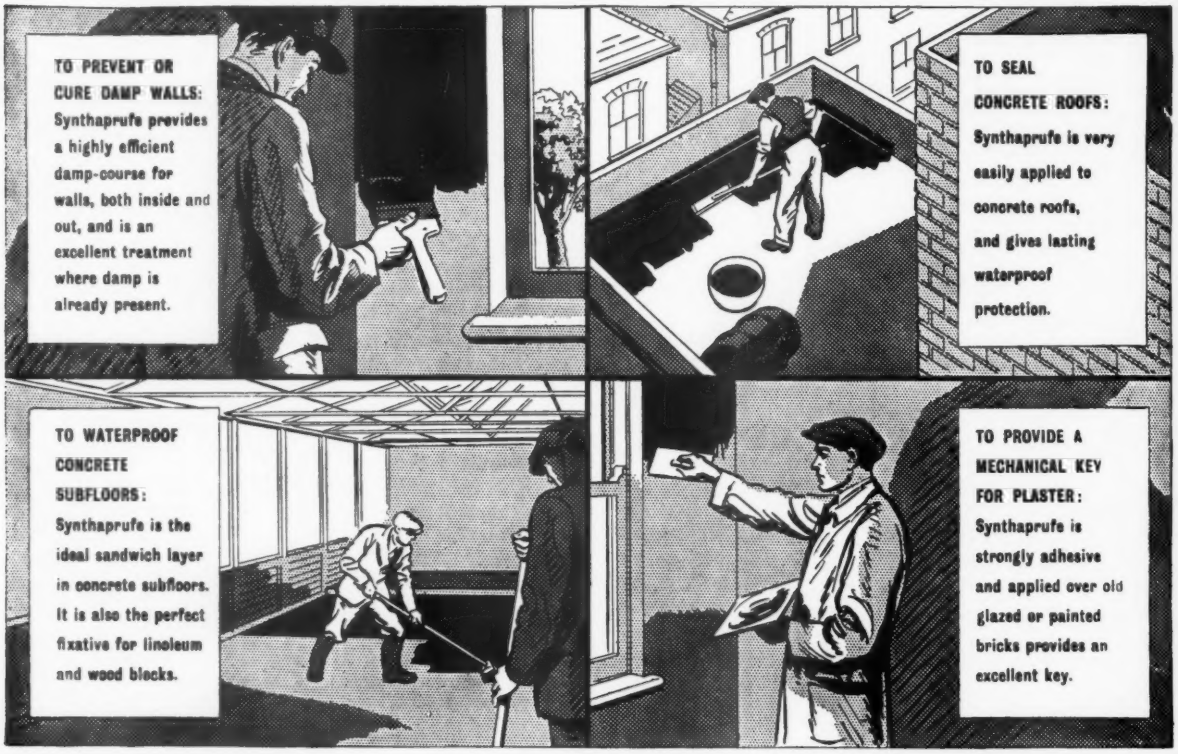
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BUILDING RESEARCH STATION DIGEST 109

April 1958

Building Economics: Cost Planning

MODERN building materials and techniques increase freedom in design; by their variety they also increase the difficulty of finding the most economic design solutions. This Digest outlines an approach to cost planning that takes into account both initial costs and running and maintenance costs.

Cost planning consists of no more than predicting the cost consequences of design decisions. In relating design to cost it is not sufficient to take account only of initial costs; the consequential costs over the life of the building for maintenance and servicing must also be considered. The problem is complicated by the fact that several interests are involved, and a saving for one may lead to an extra expense for another; what is in the interest of the owner is not necessarily in the interest of the user, or of the community.

Cost planning has to be considered at a number of levels, some of which call for administrative rather than design decisions. The classification adopted in this Digest is:

Initial costs
- Planning economy
- Structural economy

Annual costs
- Maintenance costs
- Service costs
- Heating and lighting

INITIAL COSTS

Planning economy

Economy starts with the plan shape of the building; the smaller the ratio of external wall area to enclosed area, the lower tend to be the costs of initial construction and, incidentally, the costs of maintenance and heating. Appearance cannot be ignored, of course, and the cheapest solution may not therefore be acceptable. However, in a sample of blocks of multi-storey flats the ratios of external wall area to net floor area ranged from 0·80 to 1·60; this wide variation shows the scope for possible improvement in some of the designs. Another criterion of planning economy is the ratio of access area to gross floor area. For the upper floors of the same sample of flats this ratio ranged from 9 to 29 per cent. An analysis of the plans suggested that a ratio of 15 per cent can generally be achieved.

The Ministry of Education has made similar studies of the use and planning of floor space for schools, and over the last six years the total area per child has been reduced by 40 per cent while, within the smaller total area, the amount of teaching space has been maintained or increased. As a result of this and similar economies, the cost per school place has been reduced by 20 per cent without sacrificing standards of accommodation.

Again, the cost of lift installations in blocks of multi-storey flats has been found to range from less than £50 to nearly £200 a dwelling. This variation was due more to different numbers of dwellings being served by each lift than to variations in the installation costs of the lifts themselves. But it is often a short-sighted policy to consider one aspect of design in isolation from the others; allowance must be

made for mutual repercussions. An attempt to increase to a maximum the number of flats served by a lift might result in an awkwardly shaped and expensive structure. It would appear that £100 per flat for lift installation is a reasonably practicable figure at which to aim.

Structural economy

Structural economy depends on the use and choice of materials; it is concerned with erection, that is labour plant and administrative costs, as well as with the costs of the materials themselves. Again it is necessary to consider the mutual repercussions of design decisions as well as the direct effect on a single element.

The simplest type of economy in the use of materials arises from designing so that their characteristics are fully exploited, which results in economies of material and usually of labour. It is wasteful to use materials with qualities over and above what is required in the given situation. For example, in some of the multi-storey flats previously referred to the concrete was used below its full load capacity and in places where a cheaper material would have satisfied all requirements. As a result they were found to contain nearly three times as much concrete as some other flats and their superstructure cost nearly twice as much.

The choice of material depends both on prices and on properties. Relative prices change and, with them, the most economic solution. Labour costs must also be considered. For instance, assuming all are acceptable on technical grounds, the most economic material for a domestic hot-water installation depends on the relative prices of copper, iron and lead pipe. Again, the balance of advantage for prefabrication in the factory as against site construction depends largely on the relation of labour to other costs.

The differences between the costs of alternatives may be so great that changes in the price relatives are unlikely to change the order. For instance, for multi-storey flats, with current design procedures, reinforced concrete frames are 30 to 40 per cent cheaper than steel frames —a rather large difference to be bridged by any change in prices.

The choice of material may be affected more by construction costs than by the cost of materials. Savings can be made by adopting designs that allow for the repetition of simple operations and for the concentrated use of mechanical and other plant. The cost of providing and fixing shuttering for concrete is often more than that of the concrete itself. The simpler the shuttering and the more often it can be used, the cheaper will be the price of the finished concrete.

Small design details may increase costs out of all proportion to the aesthetic effect they achieve.

The plant costs attributable to components of building are often very high because, while the plant is needed on the site for long periods, a large proportion of this time is spent standing idle. Economies in plant costs can be achieved by designs that entail regular demands on the plant for services near their maximum capacity —design requiring, for instance, a continuous and uniform flow of concrete, or the lifting of a steady flow of units at about the maximum lifting capacity and minimum cycle time of a crane.

The price of useful space

The success of the designer in obtaining economies in planning and structure is judged by the building user in terms of the price of the useful space provided. The range of such prices is often very wide; in a broadly comparable group of recently built factories the highest costs were 2½ times the lowest for roofs, 3 times the lowest for walls and 5 times the lowest for heating and ventilation. Comparisons of this kind can be most instructive, both to the client and to the designer, for such differences in price often result as much from design limitations imposed by the client as from the planning and structural design. It is as important to compare the cost of the client's stated planning needs against the advantages they offer, as it is to compare the costs of planning and structure. The costs of the extra five feet of free height or distance between the columns in a factory may be out of all proportion to the advantages gained by the user.

ANNUAL COSTS

It is not sufficient to limit cost planning to initial costs. The annual charge is of great importance to the user, and a cheap building may in the long run be far more expensive than one with much higher initial costs. The annual equivalent of first costs depends on the life of the building and on the rate of interest. Most buildings have a life of at least sixty years, which at the range of interest rates likely to prevail, gives an annual charge little greater than the rate of interest. Suppose the long-term interest rate is about 5 per cent, so that the annual charge is about a twentieth of the first cost: it would then not pay to spend more than £1 on first costs in order to reduce annual costs by a shilling.

Maintenance costs

For selecting materials, in the light of our present rather limited knowledge of maintenance costs and useful life of buildings, the above criterion is sufficiently accurate. So far the only type of building that has been studied at all thoroughly from the aspect of maintenance is local-authority housing. For this type of building the equivalent capital cost of maintenance compared with initial costs is comparatively low, the only exception being water services (84 per cent) and external painting (100 per cent). The expenditure on water services is spread over a large number of small items and offers little scope for reducing the combined capital and maintenance costs. Some reduction in the total costs of materials normally protected by paint can probably be achieved by the substitution of materials not requiring regular painting, for instance by using hardwood instead of softwood, at least where a paint finish is not required also for specially decorative purposes.

The factor of one-twentieth depends, of course, on the expected length of life: the shorter the life, the higher is the acceptable level of expenditure on maintenance. While, for instance, for a permanent building, it is a matter of indifference whether a first cost of £1 or an annual cost of a shilling is incurred, for a building with an expected life of 14 years this "indifference level" for annual costs rises to two shillings, and, for a 10-year life, to about half a crown.

Thus a temporary roof covering that needed replacing every fourteen years and with annual maintenance costs of 2·5 per cent would have the same total costs as a permanent covering costing 25 per cent more initially and with maintenance costs of 5 per cent per annum.

Service costs

The same reasoning is applicable to service costs. At current rates, service staff cost about £500 a year; this is equivalent to an initial cost of £10,000. It is, therefore, worth spending up to this amount in order to eliminate the need for a liftman, a stoker or a cleaner. Thus, in the long run, grass as a form of surface covering is twice as expensive as precast concrete slabs.

This principle is applicable to most planning, particularly to the planning of production and handling areas, of commercial kitchens and dining rooms, and of housing estates. For instance, the savings to be achieved by reducing the width of estate roads and by substituting footpaths may be offset by extra costs incurred by lengthening the carrying of dustbins and commercial delivery, the substitution of hand for mechanical road sweeping and the making good of damage likely to be caused by vehicles crossing kerbs and grass.

Heating and lighting

A large proportion of the annual charges on a building consists of the costs of heating and lighting. These are influenced greatly by the planning and structure of the building. For example, other things being equal, the heat loss from a compact single-storey school with a storey height of about 8 feet might be about 30 per cent less than that from one with a straggling design and a storey height of around 11 feet. Moreover, the initial costs of the building (and probably also of the heating plant) would be about 20 per cent lower.

The heating and ventilating costs of factories probably amount to between one-third and two-thirds of the combined total of the running costs of the building and the annual equivalent

of its initial costs, a proportion large enough to warrant some attention. This proportion will vary from factory to factory, and so will the relative amounts of heat lost by conduction through various parts of the fabric and through fortuitous or planned ventilation. An analysis of where the major heat losses occur may lead to economies. For instance, the roof tends to be one of the dominant determinants of the heating costs. Other things being equal, the flat roof is the cheapest as regards heating costs. Both the fabric losses and the volume of air to be heated are greater for other forms of roof. The standard of insulation, and, particularly, the amount of glazing, are also important factors in the costs of heating.

Again it is the total costs that matter, and the effect of each design decision must be studied with this in mind. For instance, the area of glazing affects at once structural, heating and lighting costs, and some form of cost analysis which shows the effect on all three is necessary. One such method of analysis is illustrated by the following example.

TABLE 1

Annual cost of a single-storey factory (£)

Functional group	*Fabric*	*Heating*	*Lighting*	*Total*
Ground floor and below ..	310	310	—	620
Walls and structure ..	490	290	−30	750
Roof	720	930	−120	1,530
Ventilation ..	30	1,560	—	1,590
Lighting	—	—	950	950
Other	650	—	—	650
Total ..	2,200	3,090	800	6,090

The construction cost has been broken down into its component parts and converted to an annual charge as explained earlier; an addition has then been made to the annual costs to allow for maintenance. The loss of heat through the fabric has been calculated with due regard to areas, U-values and temperature gradients; the loss by ventilation is based on the number of air changes. In making the heating-cost estimates, allowance has been made for the efficiency of the heating system, the length of the heating season and average temperature, and the cost of fuel, labour, maintenance and replacement of the heating system. The cost of lighting, £950, is the cost if the factory were lit artificially the whole time it was occupied; deductions are then made for reductions in artificial lighting resulting from natural light entering through glazed areas, allowance being made for their efficiency and for the intensity of natural light.

Similar tables can then be drawn up for changes in plan and specification and the results compared. As an example (Table 2), the effect of removing roof glazing would be to reduce roof costs by £600, the monitor type roof becoming a flat one. The corresponding saving if wall glazing was removed would be only £40; such a difference is probably within the margin of error of estimates of this kind.

TABLE 2

Comparison of annual costs with and without glazing (£)

Component	*Roof*		*Walls*	
	Glazed	*Unglazed*	*Glazed*	*Unglazed*
Fabric	720	520	490	490
Heating ..	930	410	290	220
Lighting ..	−120	—	−30	—
Total ..	1,530	930	750	710

It will be noticed that half the annual cost of this factory building was for heating; the proportion is not always as high as this. Again, half the heating cost was a result of air-changes. Of the heat losses through the fabric, over half was through the roof—perhaps the easiest place to secure economies.

THE INTERESTS OF OWNERS, USERS AND THE COMMUNITY

The incidence of planning and design costs varies between the interests concerned. The property owner, whether private or public, is concerned mainly with initial costs, especially if letting is on the basis of the tenant being responsible for repairs. It is doubtful how far an assessment of maintenance, service and other running costs enter into determining the level of rents. Property owners, therefore, attach primary importance to reducing initial costs. Taxation treats running costs more favourably than initial costs and, therefore, business men who are owner-occupiers tend to be more interested in reducing the latter than the former. The interest of the community is in value for money in terms of actual resources, labour and materials.

These different points of view can be easily illustrated in the case of housing. The cost of building dwellings rises substantially with the height of the block. On high-cost land, however, as the height of the block rises, the cost of the land apportioned to each dwelling may fall faster than the erection costs of the dwelling rise. In city centres, where the land costs perhaps £10,000 to £20,000 an acre, it therefore pays developers to build tall blocks of flats and hotels, and for that matter, offices. Public housing authorities, on the other hand, receive subsidies on expensive land: where land costs about £5,000 or more per acre, these subsidies more or less offset the extra cost of the land; in consequence there is no longer so large a saving in land cost to offset the increase in erection costs with height of block. The total costs of building high then tend to rise with height of block, even though the buildings are themselves subsidized as well as the land. Thus whereas private developers can reduce rents by building high on high-cost land, public developers cannot. From the point of view of the community, building high uses more labour and materials than two-storey housing and this is not, of course, affected by the price of land.

To the tenant, or building user, the rent forms only one part of the cost of using the building; to it must be added the cost of maintenance, services, heating and lighting. Running costs may be more affected by the design features than are initial costs and hence rents. Often the two types of costs change in opposite directions. For instance, electrical floor heating is cheaper to install than solid-fuel heating systems, but it costs more to obtain the same degree of warmth with the electrical system than with the solid-fuel systems. Thus the solid-fuel systems are cheaper for the tenant and, what is more important from the point of view of the community, use up less materials and labour.

DATA FOR COST PLANNING

Much of the basic material necessary to compile the cost estimates lies ready to hand in the offices of the designers and planners. Initial costs can be obtained without difficulty, even from the conventional priced Bill of Quantities, and information on running costs can often be compiled from information obtained from manufacturers and users. Data based on wider experience can be obtained from books of reference and from cost data published in journals, either by designers or research establishments. There is, nevertheless, a real shortage of design cost data and much can be done to alleviate this shortage by the publication of such data, in suitable detail, by designers and users.

(Prepared at the Building Research Station, Garston, Watford, Herts.)

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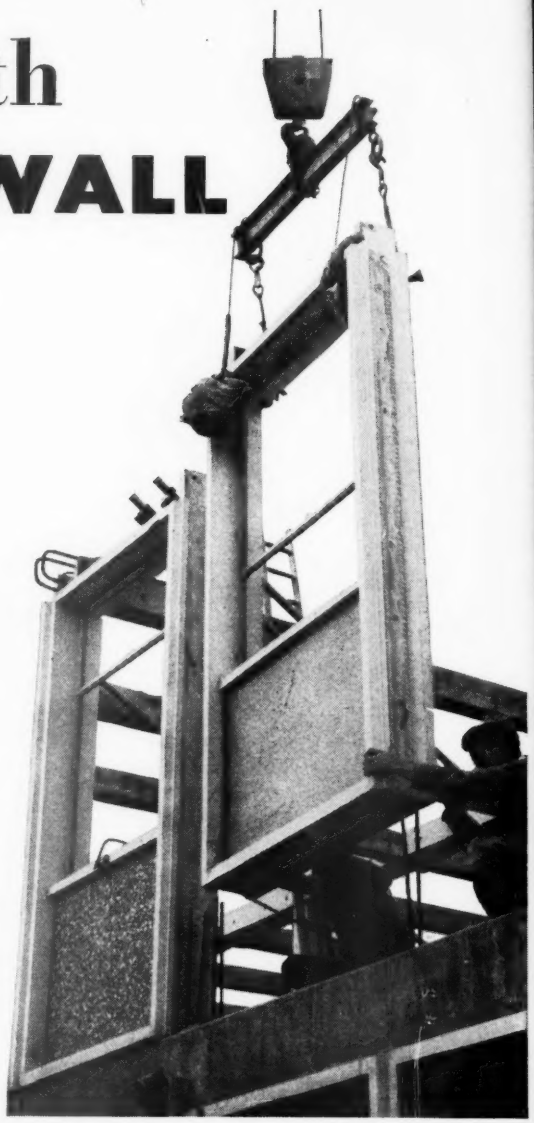

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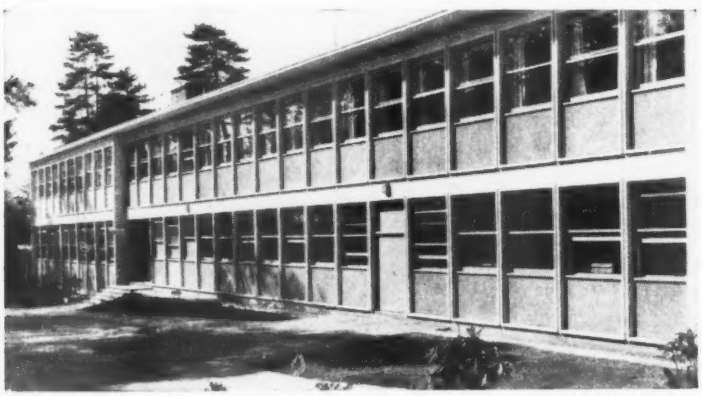

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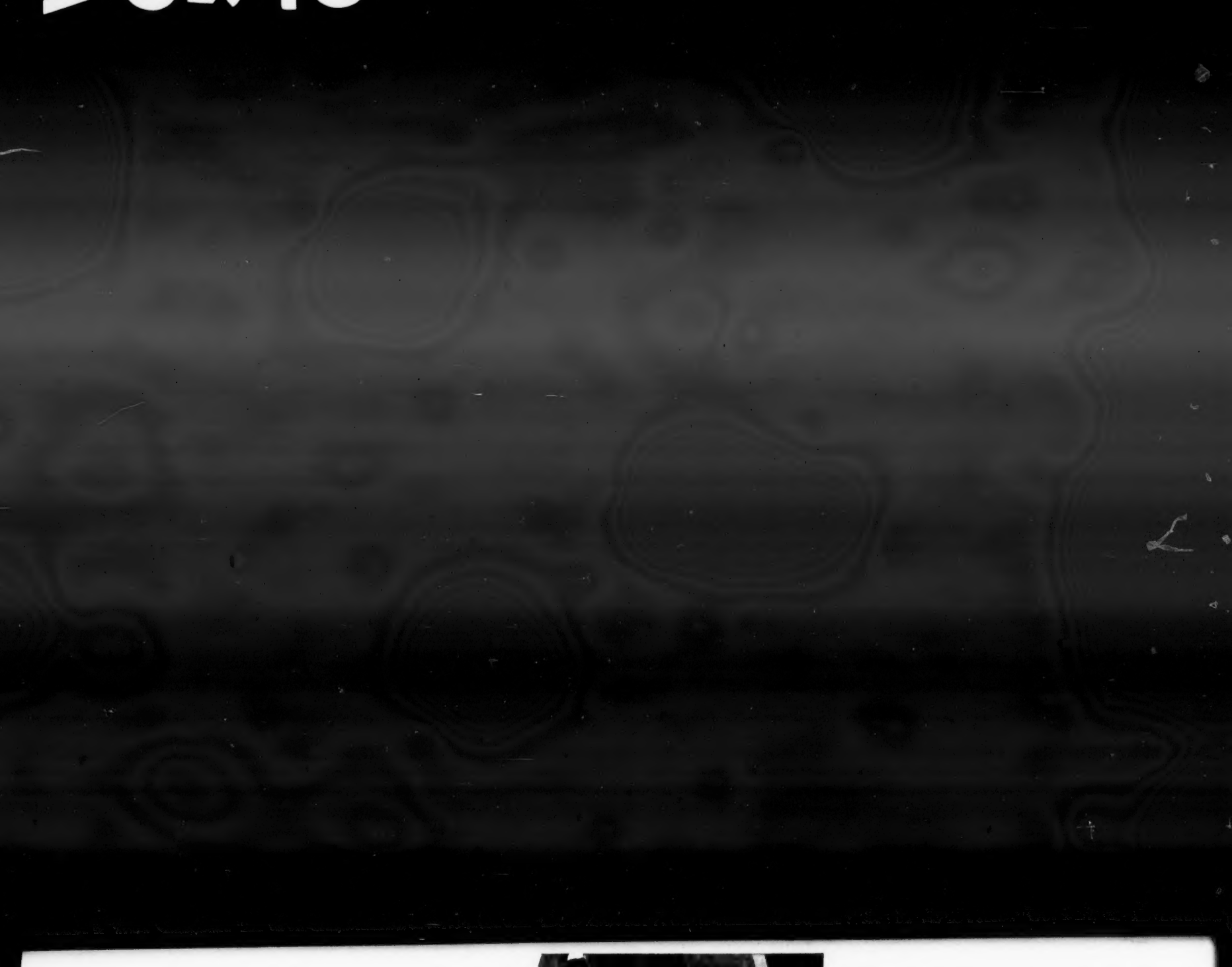
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